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THE

NATURAL HISTORY

OF

PLANTS.

VOL. VIII.

THE

NATURAL HISTORY

OF

PLANTS.

BY

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VOL. VIII.

COMPOSITÆ, CAMPANULACEÆ, CUCURBITACEÆ, LOASACEÆ,

Fig. 4.
Flower ($\frac{4}{1}$).

LONDON:
L. REEVE & CO., 5, HENRIETTA STREET, COVENT 337, t. 162.—
Suppl. ii. 194; *Ill.*

1888.

B

LONDON:
PRINTED BY GILBERT AND RIVINGTON, LIMITED,
ST. JOHN'S HOUSE, CLERKENWELL ROAD.

LXVI. COMPOSITÆ.

I. THISTLE SERIES.

The flowers of the Thistle[1] (fig. 1–10), like those of most

Carduus crispus.

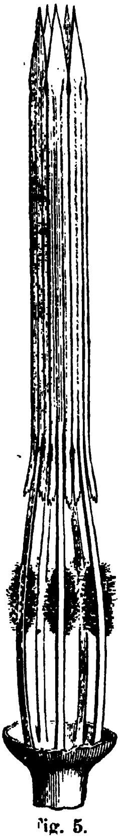

Fig. 5.
Andrœcium ($\frac{15}{1}$).

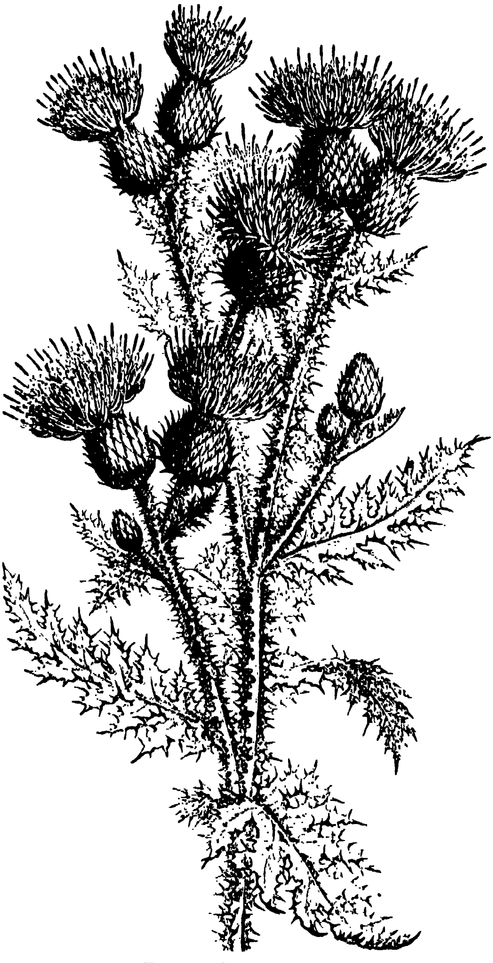

Fig. 1. Floriferous branch.

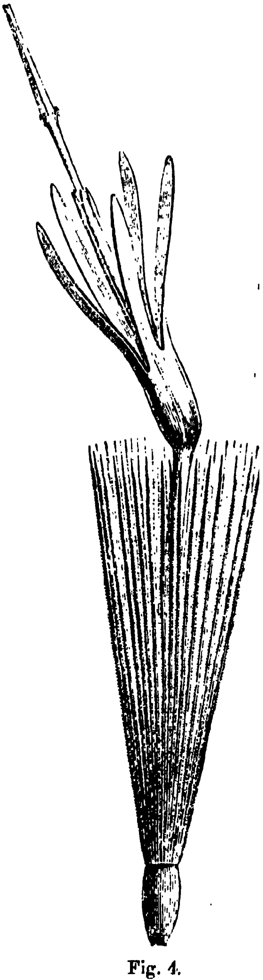

Fig. 4.
Flower ($\frac{4}{1}$).

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[1] *Carduus* T., *Inst.* 440, t. 253.—L. *Gen.* n. 925.—Adans. *Fam. des pl.* ii. 116.—J. *Gen.* 173.—Gærtn. *Fruct.* ii. 337, t. 162.—Lamk. *Dict.* i. 696; Suppl. ii. 194; *Ill.*

plants of this family, are united in a head or capitule,[1] often mistaken for a flower proper. The many-leaved involucre[2] of the whole inflorescence, formed of an indefinite number of imbricated, spinous, unequal bracts, generally the shorter the lower they are situated on the spiral in which they are inserted,[3] is then considered a calyx. On removing these bracts the common receptacle[4] of the inflorescence is exposed to view, consisting of a depressed apple-shaped terminal dilatation of the branch bearing the flowers, in many species nearly flat or slightly convex on the upper surface. On this are inserted the flowers,[5] all fertile and similar,[6] and regarded as regular,[7] mingled with numerous hairs borne by the receptacle. Each separate flower

Carduus crispus.

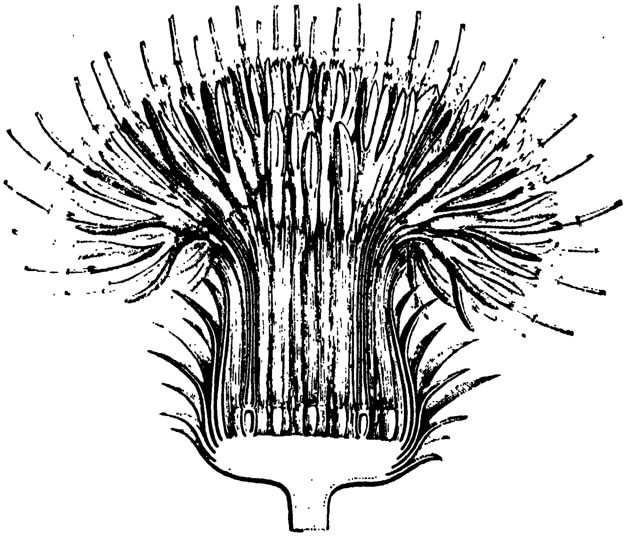

Fig. 2. Long. sect. of inflorescence (capitule) ($\frac{4}{3}$).

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t. 663.—Cass. *Dict. sc. nat.* xli, 314, 336. —DC. *Ann. Mus.* xvi. 155; *Prodr.* vi. 621.—Spach, *Suites à Buffon*, x. 95.—Endl. *Gen.* n. 2884.—Payer. *Fam. nat.* 19.—B. H. *Gen.* ii. 367, n. 633.—*Clomion* Adans. *loc. cit.* 116.—*Alfredia* Cass. *Bull. Soc. philom.* [1815], 175; *Journ. Phys.* (1816), 145; *Dict.* i. Suppl. 115; xxi. 422; xli. 311, 324.—DC. *Prodr.* iv. 666.—Endl. *Gen.* n. 2896. —*Clavena* DC. *Prodr.* vi. 633 (not Neck.). —Endl. *Gen.* n. 2885.

[1] Calathida, Anthodium, Compound flower.

[2] Or Periclinium.

[3] Illogically do M. Decaisne and other authors designate the exterior bracts of this involucre, when from smaller dimensions or different direction they differ from the interior, as a *calycule*. In the description, these bracts are sometimes called *scales* (*squamæ*), *phylli* or *phyllarii*.

[4] Clinanthium, Anthodium.

[5] Florets, flosculi.

[6] Whence the name *Homogamous*.

[7] Much more commonly they are somewhat

has a sessile, concave, purse-like receptacle,[1] containing the inferior and adnate ovary, and bearing on the margin of its orifice the so-called epigynous perianth,[2] and the pappus. The latter, long considered as an extremely divided calyx, is formed of an indefinite number of ascending, slightly rigid hairs,[3] very finely bearded at the margins, and disposed in several series, slightly united at the base in a short ring which is afterwards detached with them.[4] The corolla, narrow tubular, is more or less dilated at the level of the limb which divides into five lobes generally somewhat unequal,[5] valvate in the bud. In the upper part of the tube are inserted five stamens alternating with the lobes of the corolla and syngenesious, that is, the anthers are united at their margins in a tube[6] while the filaments are free. Throughout some portion of their extent they also bear rather long and soft hairs or nap resembling a muff. The anthers are introrse, two-celled, dehiscing by two longitudinal clefts.[7] The connective is prolonged above the two cells in a more or less pointed and nearly triangular blade, and each cell terminates below in a flattened, irregularly triangular and more or less elongate auricle.[8] The single cell of the ovary encloses an

Carduus crispus.

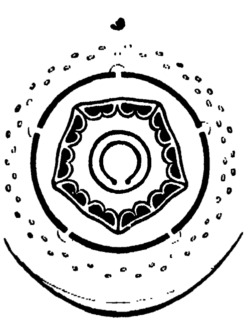

Fig. 3. Floral diagram.

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irregular, and generally the more so the more exterior, that is the more aged. Then also the tube is longer and more curved outwards. The irregularity of the limb is owing to the depth of the clefts which separate the lobes from each other; there is generally one shorter, the interior, two longer, the anterior, and two intermediate in length.

[1] For a long time and still by most botanists erroneously considered as a tube adhering to the calyx.

[2] *Pappus.*

[3] *Setæ.*

[4] The development of these hairs is posterior to that of the perianth (Payer).

[5] The nervation of this corolla presents quite a special and nearly constant character in this family, studied as early as 1816 by R. Brown, and has given to the Compositæ the name of *Neuramphipetalæ* (Cassini). The nervures of the tube correspond to the sinus separating the lobes. On reaching the base of the sinus each nervure bifurcates, and the two branches continue along and parallel to the margin of the limbs on each side of the sinus. In other Compositæ these nervures are branched or recurved in a peculiar manner.

[6] Whence *Synantherous*, and the name *Synanthereæ* given to this family.

[7] The pollen, in most genera of this series, is ovoid with three spinous longitudinal ridges. In water, it becomes a slightly depressed sphere with three bands, on which are three large papillæ. In certain Centaureæ and *Xeranthemum*, it is ellipsoid; three longitudinal ridges; external membrane punctuated; in water, a sphere with three bands and three papillæ.

[8] Appendage or tail (*Cauda*) of anther.

almost erect,[1] anatropous ovule, with inferior and posterior micropyle.[2] A raised epigynous disc surmounts the ovary and surrounds the base, suddenly contracted[3] at this point, of a style traversing the tube formed by the anthers,[4] the exserted extremity of which is divided into two pointed or slightly obtuse branches, side by side,[5] below the base of which is a circular enlargement covered with hairs.[6] The fruit is described as an achene; it is often more of a caryopsis.[7] It is dry, indehiscent, glabrous, surmounted by a circular border in which is inserted the pappus, and, more inwards, by the persistent, accrescent, often hardened epigynous disk (fig. 6, 7). The seed, erect, encloses within its thin covering, a fleshy oily embryo with short conical inferior radicle and superior plano-convex cotyledons.[8]

The Thistles proper are herbaceous, often perennial plants, with simple or branched stem. Most of their organs are covered with spines. The leaves are alternate, without stipules, at the base often decurrent upon their axes, serrated or sinuo-dentate, or pinnatifid. Their lobes or teeth are armed with rayed or oftener spinescent hairs. The flowers are arranged in capitules, generally terminal and often united in corymbiform cymes, with a centrifugal evolution.

The fruit, in the Thistles proper, is generally attached by a basal surface corresponding to an areole of the receptacle. This surface, however, may become somewhat oblique relatively to the axis of the fruit; it is principally because this obliquity is more decided in *C. tinctorius* and allied species, that it has been made the type of a genus *Serratula*,[9] sometimes ranged as a subtribe. But a great number of *Serratula* having, apart from this, all the vegetal and floral characters of *Carduus*, we think it should form simply a section of the latter genus.

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[1] In reality it is inserted, not exactly at the base, but a little above and sometimes even quite laterally; it is then rather ascending than erect, as in the Uragogeæ and Ixoreæ.

[2] There is only one envelope, often very incomplete.

[3] In the Compositæ there is no true epigynous disk; but, as in certain Umbelliferæ, it is the base of the style itself that is dilated into a false disk.

[4] So that, the dehiscence of the anthers taking place in the bud itself, the style, which extends from the bottom to the top, traverses the entire canal in collecting the pollen.

[5] Generally they separate, with age, only to a small extent; they are covered externally with a fine papillose down, which often extends downwards upon the style and terminates abruptly at the collarette described below.

[6] Hair collectors.

[7] The base bears a scar of insertion which, in certain types of this group, becomes, as we shall see, more or less lateral.

[8] The albumen, which totally disappears at maturity, may, however, persist in a small proportion towards the chalazic region.

[9] L. *Gen.* 921 (part.).—CASS. *Dict.* xxxv. 173.—DC. *Prodr.* vi. 667.—ENDL. *Gen.* n. 2897.—B. H. *Gen.* ii. 475, n. 648.—*Stemmacantha* CASS. *Bull. Soc. philom.* (1817);

Cnicus[1] of most authors, resembling the Thistles proper in their involucre, corolla, &c., has been separated generically because the hairs of the pappus are plumose and furnished in most cases with long and slender lateral hairs. The bracts of the involucre are either all narrow, or the exterior are wider and foliaceous, or pectinate spinous, as in *C. vulgaris*, *erecticus*, *pratensis*, *Acarna*, &c., of which have been made the genera *Cirsium*,[2] *Picnocomon*,[3] &c. As in the genus *Centaurea*, parallel so to speak with that of *Carduus*, it has been necessary to include species with a pappus of equal or unequal, entire, serrulate, barbelate, longer or shorter plumose, or even no hairs, the same must be done with *Carduus*, and *Cnicus* must become a section of this genus with a longer plumose pappus.

In like manner, the hairs between the flowers on the receptacle may vary much in length in different species of genera in this family considered very natural; we can retain only as a section of the genus *Carduus*, *Onopordon*,[4] the pappus of which has entire, or barbelate, or plumose hairs, and its receptacular depressions, in which are inserted the ovaries and afterwards the fruit, are bordered with very short hairs forming a small fringe.

In some *Cardui* the marginal hairs of the staminal filaments

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Dict. i. 460.—*Mastrucium* Cass. *Dict.* xxxv, 173. —*Klasea* Cass. *loc. cit.*—*Pereuphora* Hoffm. *Verz.* 174 (ex DC.).

[1] T. *Inst.* 450 (part.), t. 257, B. (not Vaill.). —L. *Gen.* n. 926 (part.).—B. H. *Gen.* ii. 468, n. 634.—*Echenais* Cass. *Bull. philom.* (1818), *Dict.* xiv. 170.—*Lamyra* Cass. *Dict.* xxv. 218.—*Platyraphium* Cass. *Dict.* xxxv. 173; xli. 305.—*Ptilostemon* Cass. *Dict.* xxxv. 173; xliv. 58.—*Orthocentron* Cass. *Dict.* xxxvi. 480.—*Lophiolepis* Cass. *Dict.* xxvii. 180.—*Eriolepis* Cass. *Dict.* xli. 331.—*Notobasis* Cass. *Dict.* xxv. 225; xxxv. 170.—DC. *Prodr.* vi. 660.—Endl. *Gen.* n. 2890. —*Breea* Less. *Syn. Compos.* 9.—*Spaniopttilon* Less. *loc. cit.* 10.—? *Xylanthena* Neck. *Elem.* i. 67.—*Cephalonoplos* Neck. *loc. cit.* 68.—*Chamæpeuce* DC. *Prodr.* vi. 657; vii. 305 (not P. Alp.).—*Ancathia* DC. *Guillem. Arch. Bot.* ii. 331; *Prodr.* vi. 557.—Deless. *Ic. sel.* iv. t. 73.—? *Erythrolæna* Don, *Sweet Brit. fl. Gard.* t. 154.—*Epitrachys* C. Koch, *Linnæa*, xxiv. 396.

[2] T. *Inst.* 447 (part.), t. 255.—DC. *Fl. Fr.* iv. 110.—*Chamæpeuce* P. Alp. *Exot.* 77. —Endl. *Gen.* n. 2889 (part.).

[3] Lobel. *Icon.* iii. t. 14, fig. 2.—Adans. *Fam. des pl.* ii. 116.—DC. *Prodr.* v. 634.—Endl. *Gen.* n. 2886.—*Picnocomon* Dalech.—*Acarna* Vaill. *Act. Acad. par.* (1718), 163.

[4] Vaill. *Act. Acad. par.* (1718), 152.—L. *Gen.* n. 927 (*Onopordum*).—Gærtn. *Fruct.* ii. 376, t. 161.—Lamk. *Dict.* iv. 555 (*Onopordum*); *Ill.* i. 664.—DC. *Prodr.* vi. 618. —Endl. *Gen.* n. 2881.—B. H. *Gen.* ii. 469, n. 635.—*Acanos* Adans. *Fam. desl.* ii. 116.

are so modified as to become organs of adherence uniting the filaments margin to margin. The andrœcium is then described as monadelphous. This occurs in *C. leucographus*, type of the genus *Tyrimnus*,[1] and in *C. Marianus* (fig. 6, 7), type of a genus *Silybum*.[2] Both have the pappus of a *Carduus* proper; but in the latter the bracts of the involucre are broad, spinous at the summit

***Carduus* (*Silybum*) *Marianus*.**

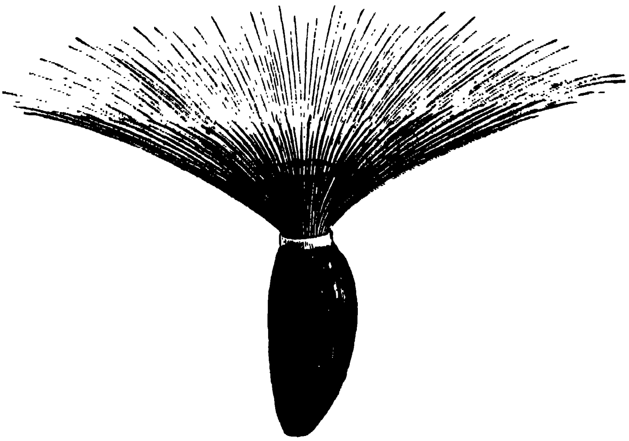

Fig. 6. Fruit ($\frac{3}{1}$).

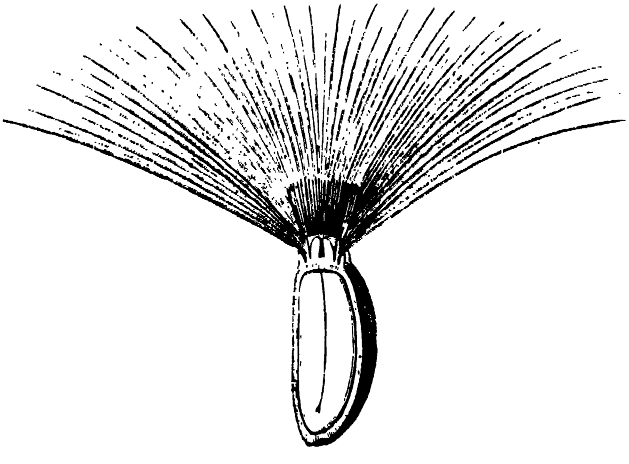

Fig. 7. Long. sect. of fruit.

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[1] Cass. *Bull. Soc. philom.* (1818), 168; in *Dict.* xli. 335.—Less. *Syn.* 11.—DC. *Prodr.* vi. 617.—Endl. *Gen.* n. 2880.—B. H. *Gen.* ii. 470, n. 639.—B. Bn. *Bull. Soc. Linn. Par.* 253.

[2] Vaill. *Act. Acad. par.* (1718), 172.—Gærtn. *Fruct.* ii. 378, t. 162 (part).—DC. *Prodr.* vi. 616.—Endl. *Gen.* n. 2878.—Payer, *Fam. nat.* 20.—B. H. *Gen.* ii. 470, n. 637.—H. Bn. *Bull. Soc. Linn. Par.* 254.

and margins. The staminal filaments are, to a certain extent, united in the same manner in *C. Galactites*, type of a genus *Galactites*,[1] but the pappus is plumose like that of *Cnicus*. We therefore necessarily make these types simply sections of the genus *Carduus*.

The Artichokes and Cardoons, distinguished as a genus under the name of *Cinara*[2] (fig. 8–10), have the characters of *Onopordon*, except that the hairs of the receptacle are long, and those of the pappus plumose, as in *Cnicus*. But the broad bracts which form the involucre around the flat or slightly concave receptacle are in many series, coriaceous, terminated in a spinous point which often disappears under culture. These plants, in our opinion, can form only a section of the genus *Carduus*.

Carduus (Cinara) Scolymus.

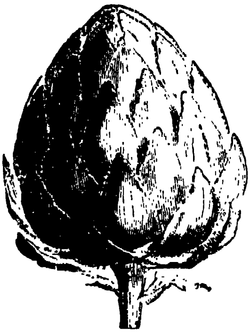

Fig. 8. Young capitule.

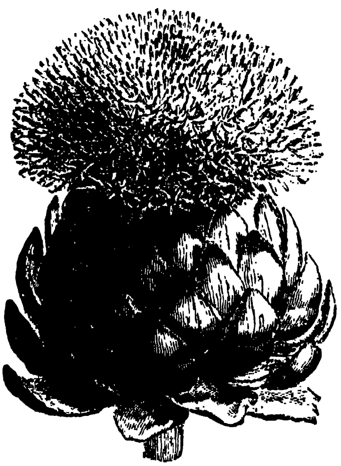

Fig. 10. Adult capitule (½).

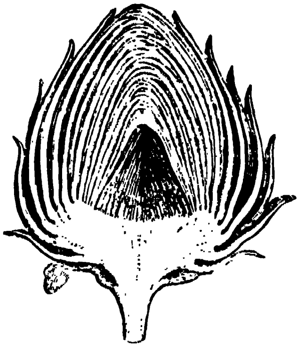

Fig. 9. Long. sect. of young capitule.

Thus composed,[3] this genus includes about 120 species,[4] natives of the temperate regions of both hemispheres, especially the old,

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[1] MŒNCH, *Meth.* 558.—DC. *Ann. Mus.* xvi. 195, t. 9; *Prodr.* vi. 616.—ENDL. *Gen.* n. 2879.—B. H. *Gen.* ii. 470, n. 638.

[2] T. *Inst.* 442 (part), t. 253.—*Cynara* VAILL. *Acad. Act. par.* (1718), 155.—L. *Gen.* n. 928 (part).—DC. *Prodr.* vi. 620; vii. 304.—ENDL. *Gen.* n. 2882.—B. H. *Gen.* ii. 469, n. 636.—*Bourgæa* COSS. *Pl. nouv. ou crit.* 39.

[3] Sect. 12 (afterwards subdivided into numorous subsections): 1. *Eucarduus*; 2. *Cnicus*; 3. *Cirsium*; 4. *Alfredia*; 5. *Chamæpeuce*; 6. *Notobasis*; 7. *Galactites*; 8. *Tyrimnus*; 9. *Silybum*; 10. *Onopordon*; 11. *Serratula*; 12. *Cinara*.

[4] GOUAN, *Ill.* t. 23, 24; 25 (*Onopordon*).—JACQ. *Fl. austr.* t. 42, 43 (*Cnicus*), 89; 90, 91, 127, 171 (*Cnicus*), 249, 348; *Hort. schœnbr.* t. 145; *Hort. vindob.* t. 5 (*Cnicus*), 44; 148, 149 (*Onopordon*), 192; iii. t. 23; *Icon. rar.* t. 166; 167 (*Onopordon*), 579.—WALDST. et KIT. *Pl. rar. hung.* ii. t. 52, 83, 232, 233, 267.—CAV. *Icon.* t. 46, 83, 165, 226; 88 (*Onopordon*).—MOR. *Fl. sard.* t. 87, 88 (*Cnicus*), 89, 90.—GUSS. *Pl.*

Centaurea (Carbenia) Benedicta.

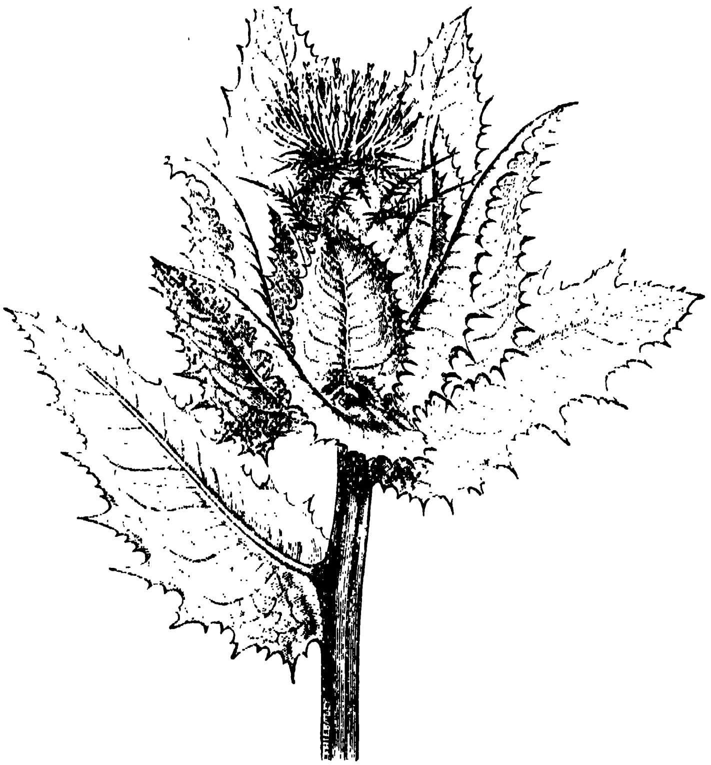


Fig. 11. Floriferous branch.

but wanting in Australia. The floral peduncles terminate the axes and often present the appearance of a centrifugal evolution

rar. t. 57.—Ten. *Fl. napol.* t. 75; 1881 (*Serratula*), 188; 189 (*Cnicus*), 246.—Vis. *Fl. dalm.* t. 49.—Sibth. *Fl. græc.* t. 826; 827–831 (*Cnicus*); 834, 835 (*Cynara*), 919 (*Centaurea*).—Desf. *Fl. atl.* t. 219 (*Serratula*), 221, 222.—H. B. K. *Nov. gen. et spec.* t. 310 (*Cnicus*).—A. Gray, *Man.* (ed. 1856), 232 (*Cirsium*), 234.—Wight, *Icon.* t. 1137 (*Cnicus*).—Labill. *Pl. syr. Dec.* ii. t. 3.—Ledeb. *Ill. Fl. ross.* t. 32 (*Serratula*), 477 (*Cnicus*) 489 (*Serratula*).—Bong. et Mey. *Mém. Acad. Pétersb.* iv. t. 10.—Bory et Chaub, *Exp. Mor.* t. 31.—Dur. *Exp. Alg.* t. 49-51; 52, 53 (*Galactites*).—Webb, *Phyt. canar.* t. 112, 113; 114 (*Cynara*).—Reichb. *Icon. Fl. germ.* t. 820–863, 887–889 (*Cnicus*), 864–880, 813, 814 (*Onopordon*), 883, 884 (*Cynara*), 802–804 (*Serratula*), 882 (*Silybum*), 819 (*Galactites*), 881 (*Tyrimnus*); *Iconogr.* t. 446; 448 (*Alfredia*), 449, 723, 988–990.—Lange, *Pl. Nov. Hisp.* t. 19; 20 (*Cnicus*).—Wilk. et Lange, *Prod. Fl. hisp.* ii. 183 (*Cirsium*), 119, 120 (*Silybum*).—Boiss. *Voy. Esp.* t. 107, 108 *a* (*Onopordon*), 110–112 (*Cnicus*), 109 (*Cynara*), 113 (*Serratula*); *Diagn. or.* ser. 2, iii. 39 (*Cnicus*), 42; 47 (*Onopordon*), 49 (*Serratula*); *Fl. or.* iii. 514; 523 (*Cirsium*), 553 (*Notobasis*), 554 (*Chamæpeuce*) 555 (*Tyrimnus, Galactites*), 556 (*Silybum*), 557 (*Cynara*), 558 (*Onopordon*).—Gren. et Godr. *Fl. de Fr.* ii. 202 (*Galactites*), 203 (*Tyrimnus Silybum*), 204 (*Onopordon*), 206 (*Cynara*), 207 (*Notobasis, Picnomon*), 208 (*Cirsium*), 226 (*Carduus*).—*Bot. Mag.* t. 1871 (*Serratula*), 2862 (*Cynara*), 2909; 3241 (*Cynara*), 3299 (*Onopordon*).—Walp. *Rep.* ii. 673, 674 (*Cirsium*), 677 (*Alfredia, Serratula*); vi. 303; (*Onopordon*), 304; 305 (*Cirsium*), 308 (*Serratula*); *Ann.* i. 451 (*Galactites, Onopordon*), 452 (*Cirsium*); v. 297, 300 (*Cirsium*), 307 (*Chamæpeuce*).

constituting, as in many other Composites, one or more cymes of capitules.

Beside the Thistles are placed the genera, differing but slightly, *Cousinia*, *Arctium*, *Stæhelina*, *Kœchlea* (?), *Saussurea*, *Warionia* and *Jurinæa*.

The Carline Thistles (*Carlina*) form a subseries (*Carlineæ*), in which the capitules are closer or more distant, and the areole of the hairy or silky fruit is straight and basal or nearly so. The pappus consists of silky threads free or united at the base and there often dilated and hard. The summit is sometimes feathery, sometimes tufted. The bracts of the involucre are all similar, or the exterior may be more developed and foliaceous; not unfrequently coloured, adding brilliancy to the inflorescence. Close beside the Carlines are grouped the very analogous genera *Atractylis*, *Xeranthemum* and *Cardopatium*.

The Centaureas (fig. 11–13) have given their name to a subseries in which the fruit, as in *Serratula* (which connects them with the Thistles) is inserted on the receptacle, in most cases, by a more or less lateral and oblique areole. They are sometimes glabrous, sometimes hairy. The fibres of the pappus are straight, threadlike or more or less scaly and disposed in two, or more generally in many series. The bracts of the involucre are sometimes all similar, often surmounted by a peculiar appendage or by a spine, sometimes dissimilar, the exterior being much larger than the others, foliaceous and deeply divided in spinous teeth.

Centaurea (*Carbenia*) *Benedicta.*

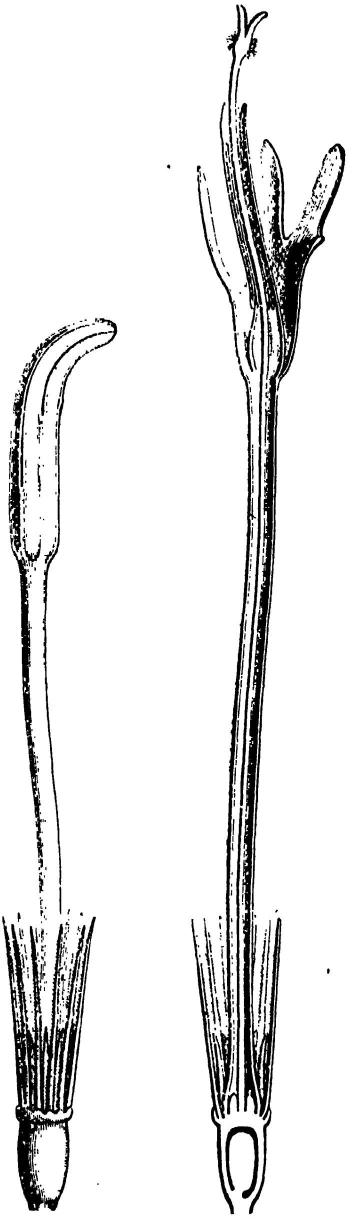


Fig. 12. Bud (☿). Fig. 13. Long. sect. of flower.

This is the case also in the involucre of *Carthamus* (fig. 14), the achenes of which are angular or compressed and the pappus is paleaceous, or formed of rigid dentelate fibres, or nil. In *Crupina*, the construction is that of the Centaureas (of which we make it only a section); but the bracts of the involucre are pointed, without appendage, and the fruits are few, often even solitary in a given involucre.

Carthamus tinctorius.

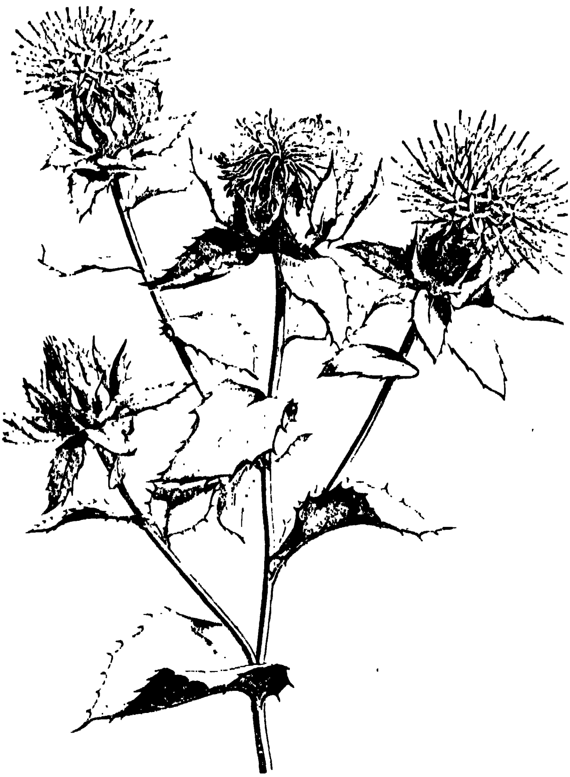
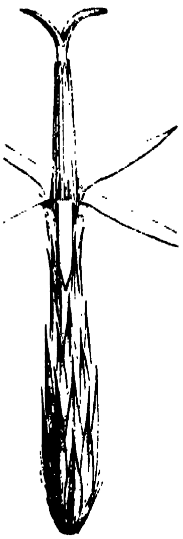


Fig. 14. Floriferous branch (½).

Echinops (fig. 15–17), with the general habit of the preceding plants, differs from them notably by each of its bracts, borne on the nearly spherical receptacle, having in its axil, not a flower, but a very short pedicel terminated by a flower and bearing above an involucel of many imbricated bracts. The inflorescence is therefore composite and considered by most authors as formed of unifloral capitules. The fruit, attached by a basal areole, is hairy or silky and crowned by a pappus often paleaceous and scanty. They are natives of the temperate regions of the old world.

In *Gundelia*, often referred to another division of this family, the flowers are regular and nearly analogous to those of *Echinops*,

Echinops sphærocephalus.



ig. 16. Flower surrounded by its bracts ($\frac{4}{1}$).

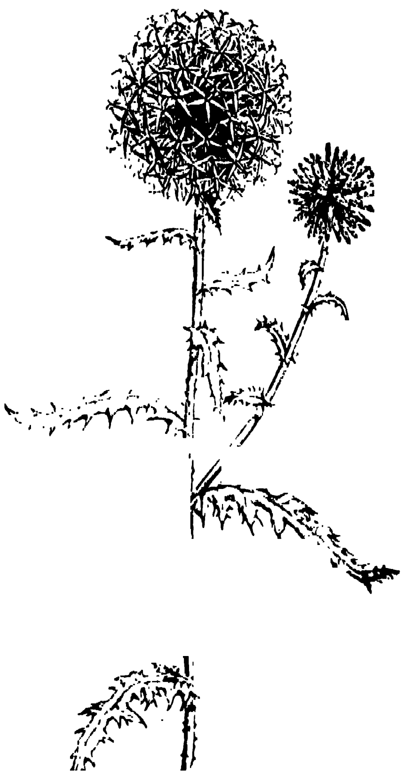


Fig. 15. Floriferous branch ($\frac{1}{2}$).

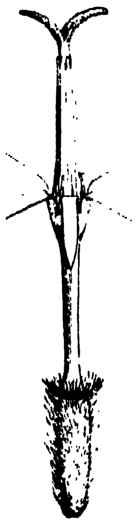


Fig. 17. Flower with bracts removed.

but in the axil of each of the bracts of the capituliform inflorescence is, not a single flower, but a small group of flowers with a centrifugal evolution, forming a contracted cyme or glomerule. They are perennial herbs of the East, with spinous leaves, like those of the Thistles, all the parts of which are filled with a white milky juice, as is often the case with the Chicories.

II. MUTISIA SERIES.

Mutisia[1] (fig. 18–22) has polygamous flowers of two kinds,[2] united in capitules, the receptacle of which, flat or slightly raised, glabrous or with a few scattered hairs, bears an involucre of broad unequal bracts, arranged in rather a loose spiral, imbricate, pointed or obtuse, the lower generally the less developed. The flowers of the circumference are irregular, female or sterile, those of the centre irregular but smaller, generally hermaphrodite and fertile. All have a pappus formed of numerous epigynous hairs, united at the base in a short obconical horn, then free and furnished at the margins with slender barbs, longer or shorter, resembling so many feathers. The whole persists in the form of a pappus at the summit of the fruit. The corolla[3] of the flowers at the circumference (fig. 18–20), much developed and very irregular, has a narrow tube, dilated to a long and broad ligulate limb, the summit of which is divided into three or five

Mutisia subulata.

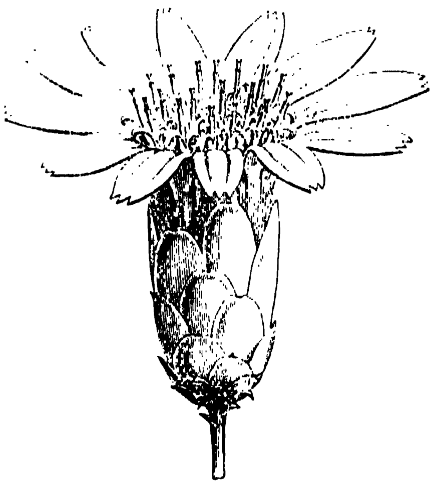


Fig. 18. Capitule.

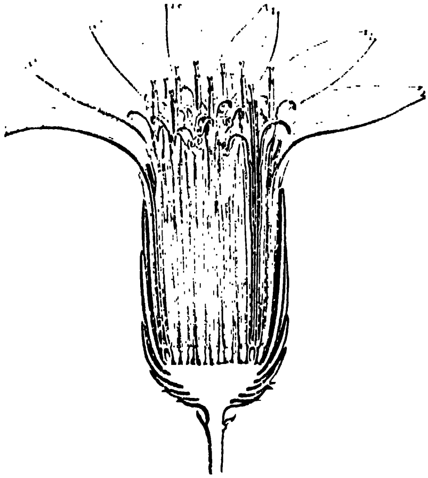


Fig. 19. Long. sect. of capi

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[1] L. F. *Suppl*, 57.—J. *Gen.* 178.—POIR. *Dict.* Suppl. iv. 37; *Ill.* t. 690.—DC. *Prodr.* vii. 4.—LESS. *Linnæa*, v, 265; *Synops.* 103. —ENDL. *Gen.* n. 2917.—PAYER, *Fam. nat.* 23. —B. H. *Gen.* ii. 485, n. 661.—*Aplophyllum* CASS. (incl. *Guariruma* CASS.).

[2] Their capitules are said to be heterogamous and radiate.

[3] Yellow, pink, or purple.

teeth, equal or unequal, and pointing outwards. The ovary is sterile or contains a single ovule, often little developed, surmounted by a small or rudimentary style. In the central flowers (fig. 21–22), the corolla is bilabiate. The exterior lip is larger, more or less erect, and formed of three divisions; the interior is shorter and consists of two lobes, bent or coiled, and may be

Mutisia subulata.

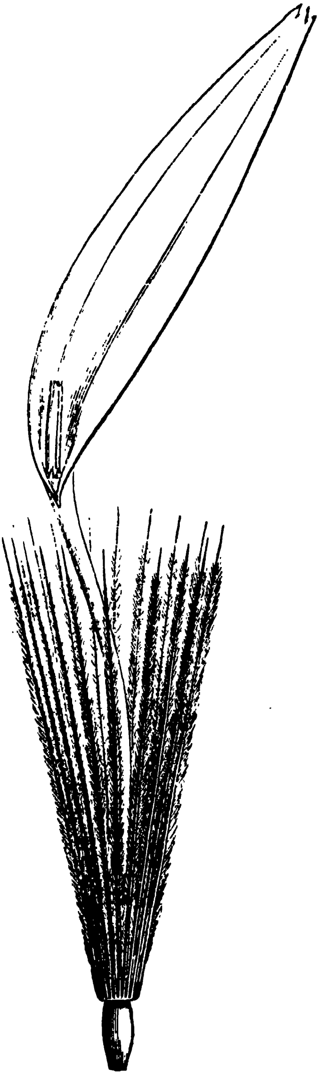
Fig. 20. Radial flower ($\frac{4}{1}$).

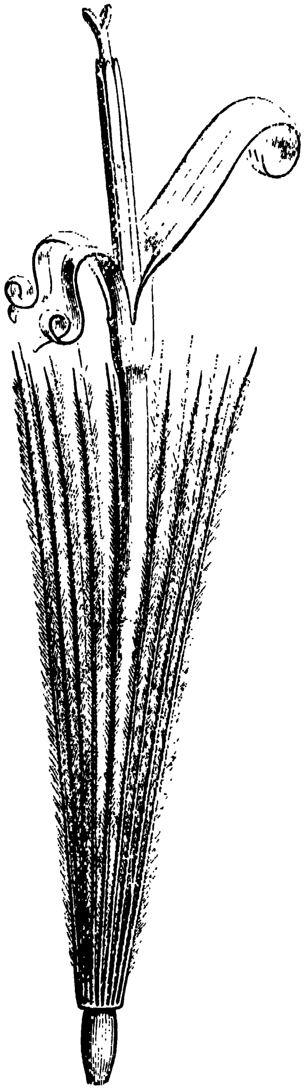
Fig. 21. Discal flower.

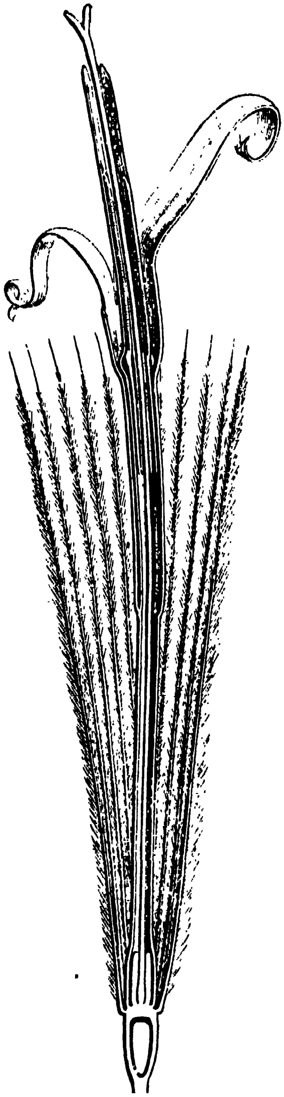
Fig. 22. Long. sect. of discal flower.

of feeble dimensions, or completely disappear. The stamens are inserted on the tube of the corolla. The filaments are free, bare or papillose below the base of the anthers, which are syngenesious, introrse, two-celled, surmounted by a long laminiform prolongation of the connective extended below each cell in a long descending, narrow and pointed auricle. The inferior ovary contains one fertile ovule with interior micropyle, and is surmounted by a style the base of which is surrounded by a high cylindrical or conical epigynous disk. The summit, glabrous or hairy, is divided into two short stigmatiferous lobes the cleft of which is prolonged more or less down each side of the style. The fruit is an oblong or turbinate angular achene surmounted by the pappus of the flower. The seed contains a fleshy embryo with inferior radicle. *Mutisia* consists of shrubs from warm or temperate South America, erect or climbing, and in the latter case increasing by the tendrils of the leaves. These are glabrous or tomentose, simple in *Aplophyllum*,[1] and in those we call *Eumutisia*;[2] pinnatifid or pinnatisect, or subcomposite in those constituting the genus *Guariruma*.[3] The petiole or midrib is prolonged in a tendril. The capitules, large and handsome, sometimes much elongated, are terminal and generally solitary. About thirty species[4] are recognized.

Beside *Mutisia* are ranged some genera differing only in unimportant characters and all natives of tropical or subtropical America or tropical Africa. They are *Chionopappus*, having opposite leaves; *Plazia*, *Gypothamnium* (?), *Phyllactinia*, *Pleiotaxis* and *Erythrocephalum*.

Chuquiraga (including *Gochnatia*) gives name to a subseries (*Chuquirageæ*) characterized by flowers all similar and rarely of two kinds. The corolla is tubular, and its five deep, generally pointed and valvate lobes are nearly equal, though sometimes united in such a manner as to form as it were two unequal lips. At the base the anthers are prolonged in two long narrow projections. The fruit is surmounted by a pappus with entire, dentelate or feathery threads, and the involucre is formed of an indefinite number of many-seried, imbricate, and unequal bracts. The two branches of the style are most frequently short and more or less close to each other in *Chuquiraga*, and the more nearly allied genera as *Wunderlichia* (?), *Hesperomannia* and *Ainsliæa*. On the other hand they are long, linear and erect in *Stifftia*, *Dicoma* (including *Hochstetteria*), *Anisochæta* (?) and *Seris*.

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[1] CASS. *Opusc. phyt.* ii. 107 (not A. JUSS.).—*Haplophyllum* LESS. *Syn.* 103.

[2] *Mutisia* CASS.

[3] CASS. *loc. cit.* 109; *Dict.* xxxiii. 472.

[4] R. et PAV. *Prodr.* 107, t. 23.—CAV. *Icon.* t. 490-500.—H. B. *Pl. æquin.* t. 50.—PŒPP. et ENDL. *Nov. gen. et spec.* t. 27-31.—REMY. C. *Gay Fl. chil.* iii. 263.—WEDD. *Chlor. and.* i. 14, t. 1, 2.—HOOK. *Bot. Misc.* i. t. 4-9.—KARST. *Fl. columb.* t. 46.—SWEET, *Brit. Fl. Gard.* ser. 2, t. 288.—FIELD. *Sert. pl.* t. 45.—PHIL. *Linnæa*, xxviii. 710; xxxiii. 107.—WALP. *Rep.* vi. 313; *Ann.* i. 990; ii. 947.

Nassauvia suaveolens.

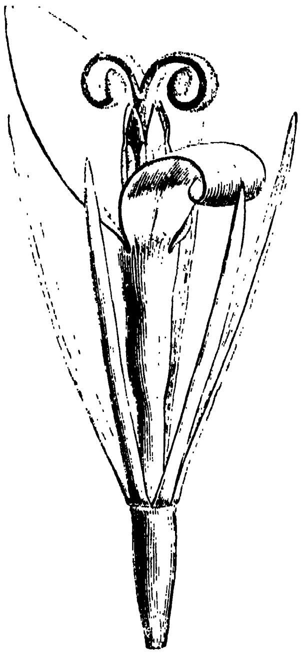

Fig. 23. Flower.

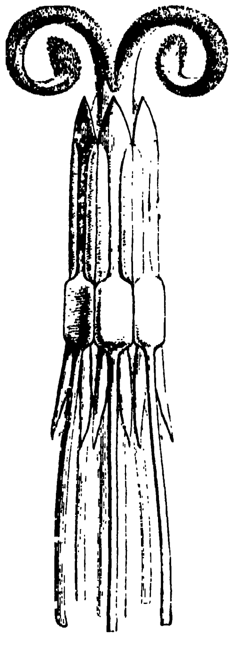

Fig. 24. Andrœcium and style.

Gerbera, head of a subseries (*Gerbereæ*), generally has flowers of two kinds; those of the ray female, those of the disk hermaphrodite and fertile. The latter, however, are found only in *Berniera*. The involucre, variable in form, consists of two unequal, 2–∞-seried bracts, and the corollas are two-lipped; in those of the radial flowers the outer lip is much more developed than the inner, and the latter may even disappear altogether. The floral receptacle, which envelopes the fruit, is in the form of an elongate gourd with narrow neck most frequently dilated to a cupule to bear the pappus, formed of numerous slender smooth or slightly scabrous threads. In the *Chaptalia* section of *Gerbera*, the corollas of the interior flowers are generally narrow, and the style extends beyond, while the interior lip of the ligulate flowers often disappears entirely. They are herbaceous plants, erroneously called stemless and with radicle leaves. Beside *Gerbera*, this group comprises *Lycoseris*, *Pachylæna*, and *Oldenburgia*, in which the stems are herbaceous or woody, and the capitules many-flowered, sessile in the axil of the leaves, or more rarely pedunculate and borne by leaf-branches; and the Asiatic genus *Catamixis*, with shrubby stems, the capitules of which have few flowers all of one kind.

A tribe of this family has been named *Nassauvia* (fig. 23, 24), and has been attached as a subseries to the *Mutiseæ*. The flowers all have a two-lipped corolla, and the branches of the style, generally elongate, are truncated or rounded at the summit.

The floral capitules are surrounded by an involucre, the characters of which vary greatly in different genera. Beside *Nassauvia* are placed the closely allied genera: *Moscharia*, *Pamphalea*, *Cephalopappus*, *Trixis*, *Proustia*, *Hyaloseris* (?), *Dinoseris* (?), *Leunisia*, *Oxyphyllum* (?), *Macrachænium* (?), *Leuceria* and *Chætanthera*.

Barnadesia (fig. 25, 26) constitutes alone a small subseries (*Barnadesieæ*). It consists of shrubs, sometimes spinous, from South America, the obconical receptacle of which bears on its convex surface a great number of spiral and imbricate bracts, larger the higher they are situated. The base, turned upwards, bears flowers all similar, sometimes very few in number, or even solitary as in *Bacazia*, and all fertile, with a two-lipped corolla which may become nearly regular in the central flowers, while in those of the circumference the inner lip is represented only by one or two small filiform lobes. The style divisions are of little depth, united or contiguous for a considerable extent, and the threads of the pappus are smooth or oftener feathery.

The subseries *Schlechtendahlieæ* also consists of only one genus, *Schlechtendahlia*, which unites the *Mutisieæ* to the *Cardueæ*. The flowers are indeed irregular, but of peculiar form. The five lobes of the corolla are valvate and all attain an equal height. But the clefts separating them are unequal; and two, deeper than the rest, limit a lobe a little wider and more hairy within than the four others. The style is concave at the summit and divided into two obtuse teeth. The hairs of the pappus are membraneous, and long attenuated. The floral receptacle is obconical, and the bracts of the involucre numerous, imbricate, rigid, unequal. It is a Brazilian plant with the habit of an with narrow and in part opposite leaves.[1]

Barnadesia rosea.

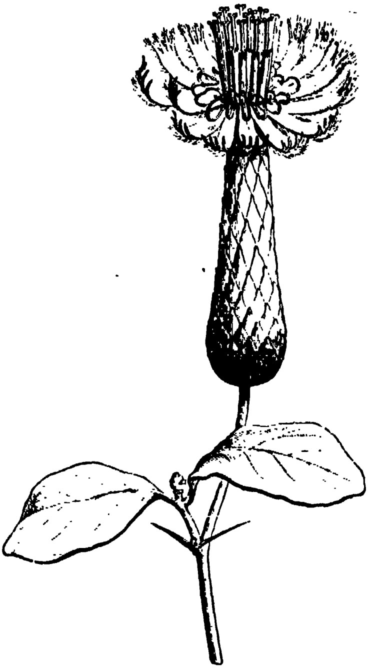

Fig. 25. Floriferous branch.

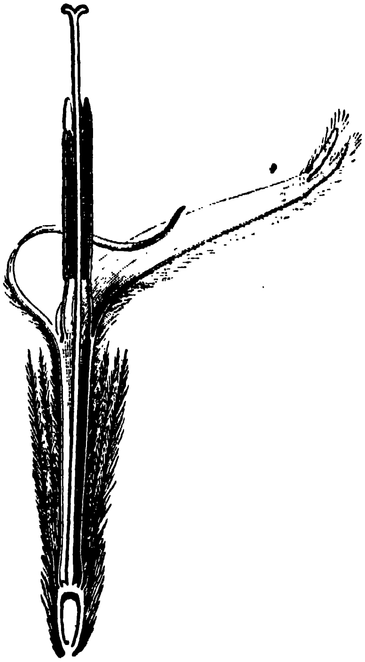

Fig. 26. Long. sect. of flower ($\frac{4}{1}$).

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ris, acaulous herbs of Madagascar, connect this series with the *Cichorieæ*, but the corollas of the radial flowers have a small posterior lip formed of two linear tongues. This lip becomes broader and shorter in the flowers of the disk. The habit otherwise resembles that of *Gerbera*. There, where we know the organs of vegetation, the radical leaves are few.

III. CHICORY SERIES.

The capitules of the Chicories[1] (fig. 27–30) are homogamous or formed of all similar flowers, hermaphrodite and irregular. The floral receptacle is saclike in form, the concavity containing the inferior ovary and the margin bearing the corolla. The latter is surrounded at the base by a small collarette, continuous or divided into a great number of short tongues resembling a fringe. Above, it is regular, gamopetalous, valvate; but four of the lobes are short, separated from each other by shallow clefts. The same separates the two posterior lobes which are prolonged very low. Consequently, when the two lips of this cleft separate, the entire limb of the corolla, said to be ligulate,[2] is dejected and reflected to the anterior side of the flower, and the short tube alone remains undivided at the base. Near the summit are inserted five alterni-

Cichorium Intybus.

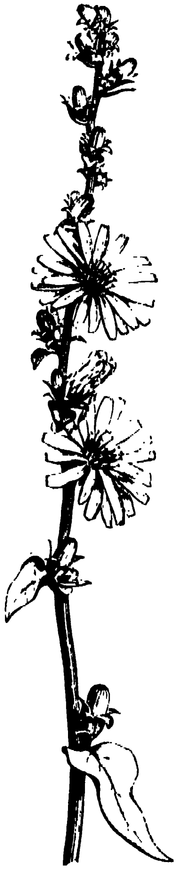

Fig. 27. Floriferous branch ($\frac{1}{3}$).

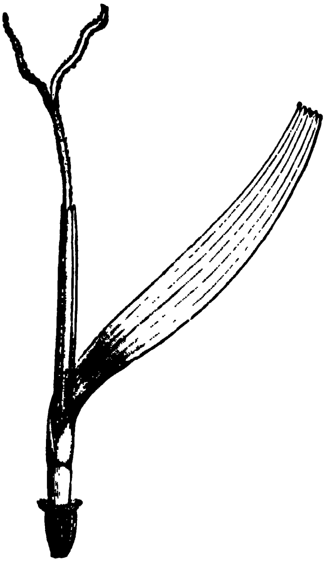

Fig. 28. Flower ($\frac{4}{1}$).

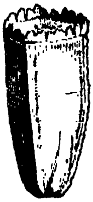

Fig. 29. Fruit.

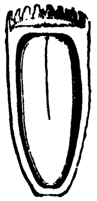

Fig. 30. Long. sect. of fruit.

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[1] *Cichorium* T. *Inst.* 478, t. 272.—L. *Gen.* n. 921.—ADANS. *Fam. des pl.* ii. 112.—J. *Gen.* 171.—GÆRTN. *Fruct.* ii. 357, t. 157.—DC. *Prodr.* vii. 84.—LESS. *Syn.* 129.—SPACH, *Suites à Buffon*, x. 55.—ENDL. *Gen.* n. 2978.—PAYER, *Organog*, 641, t. 133; *Fam. nat.* 21.—B. H. *Gen.* ii. 506.

[2] But which is not in reality a demi-floret, like the corollas we have proposed to call *hemiligulate*.

petalous stamens, each formed of a free filament and an introrse anther,[1] united in a tube with the four others, nearly basifixed, prolonged below on each side of the filament in a descending, obtuse, pointed or acuminate auricle. The ovary is one-celled and encloses a single ovule nearly erect, with micropyle turned inwards.[2] A small epigynous disk is at the base of the style, which, simple below, above the tube formed by the anthers, divides into two slender, recurved branches, somewhat obtuse at the summit and charged with papillæ.[3] The fruit is an achene, angular or compressed, more or less serrated at the base, and truncate at the top, supporting a pappus with numerous short divisions, sometimes almost nil, arranged in two or three series. The seed contains a fleshy, oily embryo with inferior radicle. The Chicories are herbaceous plants, glabrous or slightly hispid,[4] with a milky juice more or less bitter. The branches are sometimes spinescent. The leaves are alternate, without stipules, often narrow and entire or nearly so in the upper part, while lower down they are dentate or pinnatifid, sometimes lobed. The capitules, in the axil of the leaves or of the bracts which replace them at the top of certain branches, are solitary or grouped in cymes or glomerules. The receptacle is small, almost flat above, bare or having fine fringed scales between the flowers,[5] and surrounded by imbricated bracts, one- or few-seried, forming an involucre. The interior are often longer and narrower than the exterior, equal or unequal, and coming off sooner than the others. There are only two species of Chicory proper: one from the cold and temperate regions of the old world, now introduced everywhere; the other a native of the south-eastern Mediterranean region. But we must refer to this genus, as divisions, certain types which have been separated from it but which differ, as divisions, only by characters which, in this family are in reality, in our opinion, only of secondary importance. These are *Microseris*,[1] mostly American, more rarely oceanic herbs having a pappus of from four to twelve hairs, short, moderately long or laminate, sometimes feathery, and capitules borne on long axes, sometimes leafless; *Krigia*,[2] from North America, having a pappus of few scales alternating with as many slender hairs, or nil; the inflorescence of *Calais* and achenes with numerous sides.[3] Thus constituted, the genus *Cichorium* is chiefly American, and comprises about twenty species."[4]

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[1] The two cells open and expand before anthesis, at the time the style lengthens in receiving the pollen. This latter is very remarkable in *Cichorium* and a great many other types of this series (H. MOHL. *Ann. sc. nat.* ser 2, 233, 316, t. 11). Most frequently it is polyhedric, with variations sometimes very complicated.

[2] With a single coat, very incomplete.

[3] Generally, in this series, the stigmatic bands remain separate, and do not reach mid height of the style branches. The latter are generally thin, narrow, slightly obtuse or subacute, more rarely somewhat dilated or recurved; the papillæ they bear are most often very fine.

[4] The branches are spinescent in *C. spinosum* L. (*Spec.* 1142), an oriental species of which a genus *Acanthophyton* (LESS. *Synops.* 128.—ENDL. *Gen.* n. 2977) has been made.

[5] Blue or yellow.

Hieracium virosum.

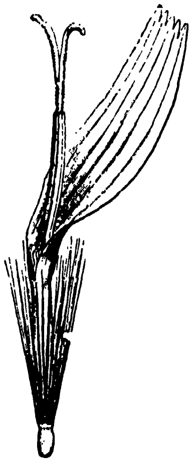

Fig. 31. Flower ($\frac{4}{1}$).

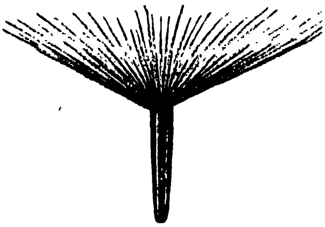

Fig. 32. Fruit.

The genera included in this series and which have been greatly multiplied, have, with the preceding, this common character, that all their flowers are irregular in the corolla, that is ligulate; they are distinguished chiefly by the form and number of the involucral bracts; the surface of the receptacle, smooth, fossetted or furnished with axillate hairs or scales outside each flower; the presence or absence, or the variable number of superficial faces of the fruit which is straight or curved; the pappus, sessile, stipitate, or nil, formed, when present, of hairs variable, indefinite or nearly definite in number, thin, smooth, or finely dentate, barbelate or feathery; or rigid, or flattened, translucent, and in this case generally long-attenuated to a point. The genera are *Arnoseris*, *Tolpis*, *Catananche*, *Hænseleria*, *Crepis*, *Hieracium* (fig. 31, 32), *Leontodon*, *Lapsana*, *Hispidella*, *Zacintha*, *Rhagadiolus*, *Scolymus*, *Scorzonera*, and *Tourneuxia*.

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[1] DON. *Phil. Mag.* xi. 388.—DC. *Prodr.* vii. 89.—ENDL. *Gen.* n. 2983.—B. H. *Gen.* ii. 506, n. 717.—*Lepidonema* FISCH. and MEY. *Ind. sem. Hort. petrop.* (1835), 31.—*Bellardia* COLLA, *Mem. Acad. tor.* xxxviii. 40, t. 34.—*Uropappus* NUTT. *Trans. Amer. Phil. Soc.* ser. 2, vii. 424.—*Calais* DC. *Prodr.* vii. 85.—ENDL. *Gen.* n. 2978.—*Phyllopappus* F. MUELL. *Linnæa* xiv. 507.—*Ptilophora* A. GRAY, *Pl. Fendler.* 112.—? *Fichtea* SCH. BIP. *Linnæa* x. 255.—DC. *Prodr.* vii. 87.

[2] SCHREB. *Gen.* 532.—DC. *Prodr.* vii. 88.—ENDL. *Gen.* n. 2981.—B. H. *Gen.* ii. 507, n. 719.—? *Apodogon* NECK. *Elem.* i. 55.—*Cynthia* DON. *Edinb. New Phil. Journ.* (1828-1829), 309.—DC. *Prodr.* vii. 89.—*Luthera* SCH. BIP. *Linnæa* x. 257.

[3] We doubtfully refer as a section to the same genus *Phalacroseris* (A. GRAY, *Proc. Amer. Acad.* vii. 364.—B. H. *Gen.* ii. 507), a Californian plant in which the involucral bracts are finally dilated and concave, and the achenes, 8-10-ribbed, quite destitute of a pappus.

[4] SIBTH. *Fl. græc.* t. 822, 823.—HOFFMG. and LINK, *Fl. portug.* t. 95.—REICHB. *Ic. Fl. germ.* t. 1357, 1358.—A. GRAY, *Emor. Exp. Bot.* 104, *Proc. Amer. Acad.* vi. 552; *Torr. Whippl. Exp. Bot.* 57, t. 17, 18 (*Microseris*); *Man.* (1856), 235.—TORR. and GR. *Fl. N.-Amer.* ii. 467 (*Krigia*).—HOOK. *Icon.* t. 237 (*Krigia*).—REICHB. *Iconogr.* t. 87, 126 (*Krigia*).—BOISS. *Diagn. or. ser.* 2, iii. 87; *Fl. or.* iii. 715.—GREN. and GODR. *Fl. de Fr.* ii. 286.—WALP. *Rep.* ii. 685 (*Krigia*), 954 (*Calais*); *Ann.* v. 318 (*Krigia*, *Microseris*).

The Lettuces (*Lactuca*), have been placed in a subtribe apart from the Chicories. The fruit is surmounted or not by a receptacular prolongation forming a long rigid beak at the summit of which is a pappus composed of a great number of verticellate and radiating hairs (fig. 33, 34). The flat receptacle of the capitule has a number of small fossets in each of which is inserted an ovary supported by a short foot. The involucre, often cylindrical, is formed of imbricate bracts in several series and generally the shorter as they are exterior. They are herbs, ordinarily with a milky juice, inhabiting the temperate regions of both worlds. Beside them are placed *Glyptopetalum*, low American herbs, and *Dendroseris* and *Fitchia*, arborescent composites, the former from the island of Juan Fernandez, the latter from Tahiti and neighbouring islands.

Lactuca virosa.

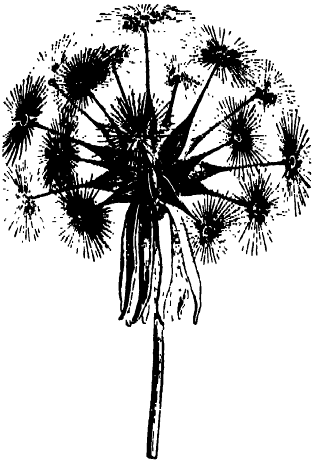

Fig. 33. Compound fruit.

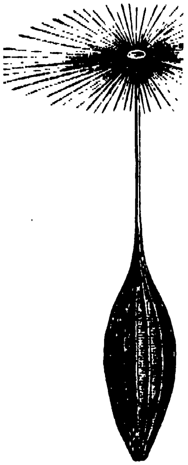

Fig. 34. Achene ($\frac{4}{1}$).

IV. VERNONIA SERIES.

In *Vernonia*[1] (fig. 35–38), the inflorescence and flowers closely resemble those of the *Carduaceæ*. The corolla is regular or nearly so and similar, tubular,[2] with five valvate lobes. The base is surrounded by a pappus, formed, most frequently, of two series of organs: the outer of small narrow or flattened scales; the inner of much longer hairs, linear-subulate or rarely flattened, equal or unequal, smooth or oftener scabrous or charged with papillæ or pile and all most frequently united in a short basal ring. The stamens are syngenesious; the free filaments inserted

Vernonia (Ascaricida) anthelminthica.

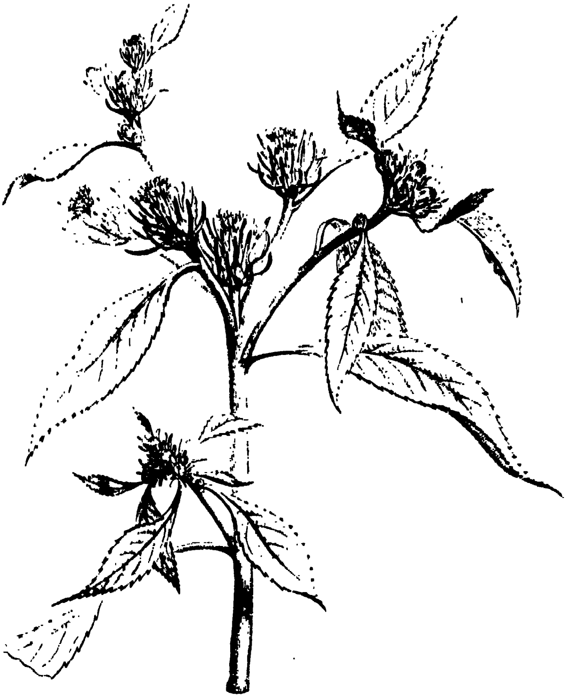

Fig. 35. Floriferous branch.

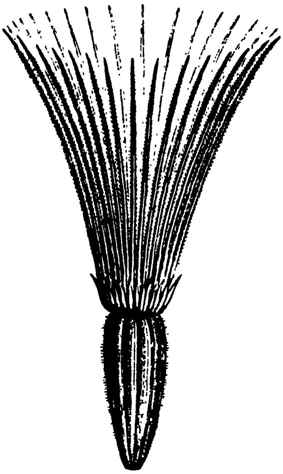

Fig. 36. Fruit ($\frac{4}{1}$).

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[1] Schreb. *Gen.* ii. 541.—Poir. *Dict.* viii. 195; Suppl. v. 465.—Less. *Linnæa* iv. 244; *Synops.* 146 (part.).—DC. *Prodr.* v. 15, vii. 263.—Spach, *Suit. à Buffon*, x. 296.—Endl. *Gen.* n. 2204.—B. H. *Gen.* ii. 227, 1231, n. 16.

[2] The capitules are said to be homogamous and tubular-flowered, with flowers generally hermaphrodite.

on the tube of the corolla; and the anthers introrse,[1] sagittate at the base, prolonged to a pointed or obtuse auricle, free or united. The ovary, one-celled and one-ovuled, is surmounted by a small epigynous disk and a style with two subulate, divergent branches, charged with papillæ.[2] The fruit is an achene basally attached recognizable as a more or less decided callus. The lateral surface has five vertical faces to which are often added from three to five secondary; and the truncated summit is surmounted by the pappus formed of one, oftener of two series of hairs, thin, filiform or more or less compressed and rigid, smooth or scabrous, bristly or dentilate, sometimes more or less dilated below, and caducous or more or less persistent.

In some species of *Vernonia*, the hairs of the pappus are distinctly in two series, one interior, the other exterior, whence the name *Distephanus*.[3] The inflorescences may be terminal, few,

Vernonia mespilifolia.

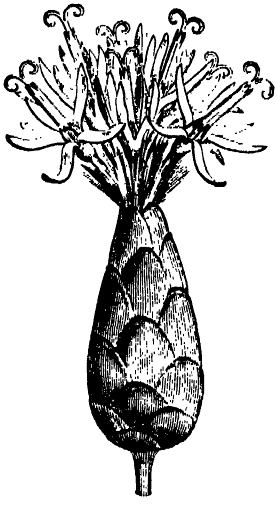

Fig. 37. Capitule ($\frac{4}{1}$).

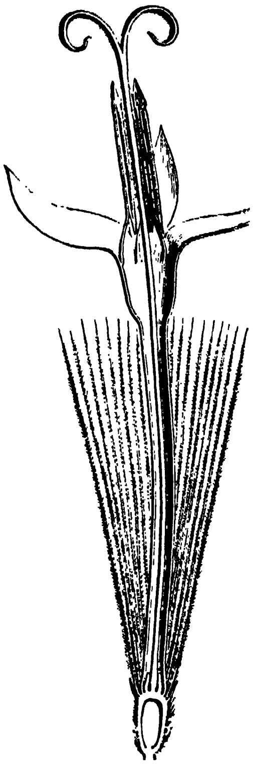

Fig. 38. Long. sect. of flower ($\frac{7}{1}$)

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[1] "The pollen of *V. montevidensis* forms a transition to the polyhedric pollen of the Lactuceæ; by its rounded form, its three longitudinal bands and its papillæ as well as by small spines with which its surface is covered, it resembles the pollen of the other Synantheraceæ, from which, on the other hand, it perceptibly differs by the numerous irregular facets its surface presents" (H. Mohl, *Ann. sc. nat.* ser. 2, iii. 315). In the other Vernonieæ (*Vernonia*, *Ethulia*, *Corymbium*, *Lychnophora*), it is "ovoid, with three longitudinal furrows, spinous; in water, a slightly depressed sphere, three bands, upon them three large papillæ." It is the same in the Eupatorieæ (H. Mohl, *loc. cit.* 315).

[2] Generally these branches are elongate, often hispid, tardily revolute, and the bands said to be stigmatic are narrow and salient and terminate below the middle of the two branches.

[3] Cass. *Bull. Soc. philom.* (1817), 76; *Dict. sc. nat.* xiii. 361.—DC. *Prodr.* v. 74.—Endl. *Gen.* n. 2215.

as in *Teichostemma*[1] and *Hololepis*.[2] In the former, the bracts of the involucre are furnished with a membranous appendage which becomes less developed and yet nearly foliaceous in *V. anthelminthica* (fig. 35, 36), type of a group *Baccharoides*.[3] *Acilepis*[4] also has few or even solitary capitules with the outer hairs of the pappus wider and nearly foliaceous. In *Sufrago*,[5] the cymes are numerous and united in one vast compound and corymbiform inflorescence; otherwise the whole constitutes a true uniparous and scorpioid cyme. A genus *Lepidaploa*[6] has been made of all the species with inflorescences thus compound and ramified. In *Gymnanthemum*,[7] besides the inflorescence being compound, the involucre, ovoid or globular, is formed of obtuse bracts, closely packed and imbricated. In all those named *Bechium*,[8] the capitules are less numerous, broader and many-flowered. The bracts become pointed in the turbinate or campanulate capitules of *Centrapalus*[9] and *Cyanopis*;[10] but the hairs of the pappus, numerous in the latter, are, in the former, reduced to the inner series or nearly so, for the outer are few, short or even nil. In *Polydora*,[11] these short and wide outer hairs become true scales.[12] In *Strobocalyx*,[13] in which the outer hairs of the pappus are short or nil, the inner bracts of the involucre expand or soon fall off. In some species of *Strobocalyx* the capitules are unifloral; these are called *Monosis*.[14] Another group with few-flowered capitules, campanulate involucre and inner bracts, obtuse and often caducous is named *Critoniopsis*.[1] *Stenocephalum*[2] comprises Brazilian species with few-flowered fertile capitules arranged in glomerules, with a cylindrical involucre and scarious or apiculate bracts; the latter are obtuse, appressed, dry in *Trianthæa*.[3] In the American species, *Turpinium*,[4] the involucre is still more contracted and unifloral besides as in *Monosis*. *Piptocarpha*,[5] with a peculiar habit and small glomerules or cymes of axillate capitules, has the involucre of *Strobocalyx*, caducous bracts and anther-cells with mucronate base. *Lachnorhiza*[6] is an American form of *Vernonia* with radical leaves, rhizomes often radicant, capitules solitary or few at the summit of a scapelike axis; *Centauropsis*,[7] a Malagese form of *Vernonia* with elongated capitules, surrounded by numerous obtuse bracts, pappus nearly as long as the fruit and the inferior auricles of the anthers acuminate; *Blanchetia*,[8] Brazilian Vernonias having a pappus of hairs shorter than the fruit, which is 10-ribbed, and capitules united in small corymbiform cymes; *Stilpnopappus*,[9] also Brazilian, having the hairs of the pappus unequal, the outer longer, but all somewhat flattened and persistent, the lateral capitules sessile or more rarely pedunculate; *Piptolepis*,[10] Vernonias from the same country, often heathlike, with the hairs of the pappus subuniserious, but caducous and slightly dilated at the base; *Heterocoma*,[11] a Brazilian form of *Vernonia* with broad whitish tomentose leaves and large sessile capitules in the axils of the upper leaves and in which certain flowers occupy the axil of a well-developed paleole; *Chronopappus*,[12]

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[1] R. Br. *Salt. Abyss. App.* 65.—*Stengelia* Sch. bip. *Flora* (1841), i. *Intellbl.* 26.— *Candidia* Ten. *Att. R. Acad. sc. Nap.* iv. *Bot.* 104, t. i. 2.

[2] DC. *Ann. Mus.* xvi. 189, t. 6; *Prodr.* v. 16. —Cass. *Dict.* xxi. 308.

[3] L. *Fl. zeyl.* 196.—Mœnch, *Meth.* 578.— *Ascaricida* Less. *Linnæa* vi. 657.—Cass. *Dict.* iii. Suppl. 38.

[4] Don, *Prodr. Fl. nepal.* 169.

[5] Gærtn. *Fruct.* ii. 402, t. 166 (part.).

[6] Cass. *Dict.* xxxvi. 16.—DC. *Prodr.* v. 25. —? *Achyrocoma* Cass. *loc. cit.* 21.

[7] Cass. *Bull. Soc. philom.* (1817); *Dict.* xx. 108 (part.).—? *Bracheilema* R. Br. *Salt. Abyss. App.* 65.—*Linzia* Sch. bip. *Flora* (1841), i. *Intellbl.* 26.—*Cheliusia* Sch. bip. *loc. cit.*— *Lysistemma* Steetz *Pet. Moss. Bot.* 340.—*Ambassa* Steetz, *loc. cit.* 364.

[8] DC. *Prodr.* v. 70.—Endl. *Gen.* n. 2208.

[9] Cass. *Dict.* vii. 382 (*V. pauciflora* Less.). —*Xipholepis* Steetz, *Pet. Moss. Bot.* 344.

[10] Bl. *DC. Prodr.* v. 69.—*Cyanthilium* Bl. *Bijdr.* 889.—? *Claotrachelus* Zoll. *Nat. Gen. Arch.* ii. 268; *Flora* (1847), 536.—Miq. *Fl. ind.-bat.* ii. 16.—*Isonema* Cass. *Bull. Soc. philom.* (1817), 152; *Dict.* xxiv. 25 (not R. Br.).

[11] Fenzl, *Flora* (1844),312.—*Vernonella* Sond. *Linnæa* xxiii. 62.—*Crystallopollen* Steetz, *Pet. Moss.* 363. t. 48 *a.*—*Lepidella* Oliv. and Hiern, *Fl. trop. Af.* iii. 267.

[12] So also in the true *Piptocoma* (Cass. *Bull. Soc. philom.* (1817) 10), of the Antilles, which have only about six long interior hairs to the pappus (see *Bull. Soc. Linn. Par.* 268).

[13] Sch. bip. *Pollichia* (1861), 170.

[14] DC. *Guillem. Arch. Bot.* ii. 515; *Prodr.* v. 77—Endl. *Gen.* n. 2220 (sect. indica).

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[1] SCH. BIP. *Pollichia* (1863), 430.—? *Tephrothamnus* SCH. BIP. *loc. cit.* 431.

[2] SCH. BIP. *loc. cit.* 385.

[3] DC. *Prodr.* v. 23.—TRI. *Ann. sc. nat.* ser. 4, ix. 37.—? *Iodopappus* SCH. BIP. *Pollichia* (1863), 369 (ex B. H.).

[4] *Turpinia* LLAV. and LEX. *Nov. veg. descr.* i. 24.—DC. *loc. cit.* 77 (not H. B. H. not PERS. not VENT.).

[5] R. BR. *Trans. Linn. Soc.* xii. 121 (not HOOK. and ARN.).—ENDL. *Gen.* n. 3032^{13}.—B. H. *Gen.* ii. 231, n. 20.—*Carpholobus* SCHOTT, *Spreng. Syst. Cur. post.* 409.—*Vanillosma* SCH. BIP. *Linnæa* vi. 630.—DC. *Prodr.* v. 18 (part.).

[6] A. RICH. *Fl. cub.* ii. 34.—GRISEB. *Cat. pl. cub.* 152.—B. H. *Gen.* ii. 231, n. 17.

[7] BOJ. *DC. Prodr.* v. 93.—DELESS, *Ic. sel.* iv. t. 7.—ENDL. *Gen.* n. 2239.—B. H. *Gen.* ii. 231, n. 19.

[8] DC. *Prodr.* v. 75; *Mém. Comp.* t. 2.—ENDL. *Gen.* n. 2217.—BAK. *Mart. Fl. bras.* vi. p. ii. 13, t. 2, fig. 1.—B. H. *Gen.* ii. 226, n. 11.

[9] MART. *DC. Prodr.* v. 75.—ENDL. *Gen.* n. 2218.—BAK. *loc. cit.* 134, t. 30–32.—B. H. *Gen.* ii. 232, n. 23.

[10] SCH. BIP. *Pollichia* (1863), 380.—BAK. *loc. cit.* 141, t. 33, 34.—B. H. *Gen.* ii. 233, n. 24.—*Hololepis* (§ *Ericoideæ*) DC. *Prodr.* v 16.

[11] DC. *Ann. Mus.* xvi. 191, t. 7; *Prodr.* v. 15.—LESS. *Linnæa* iv. 339.—ENDL. *Gen.* n. 2203.—B. H. *Gen.* ii. 294, n. 3.

[12] DC. *Prodr.* v. 84; *Ann. Mus.* xvi. 191, t. 8 (*Heterocoma*).—ENDL. *Gen.* n. 2227.—BAK. *Mart. Fl. bras.* vi. p. ii. 171.—B. H. *Gen.* ii. 236, n. 36.

Brazilian forms with capitules sessile or nearly so as in *Heterocoma*, but without floral paleoles, and leaves also whitish and woolly except above where they are uniformly rugose; *Oliganthes*,[1] an American form of *Vernonia* with one- or few-flowered capitules in compound corymbiform cymes and a pappus of few or unequal hairs or none; *Webbia*,[2] an African form with unisexual flowers.[3]

Thus constituted, this genus comprises about 450 species,[4] herbaceous or shrubby, inhabiting all the tropical regions in both hemispheres, especially America. The leaves are alternate or rarely opposite, rarely glabrous, narrow, oftener broad, soft, entire or dentate, penninerved, sessile or petiolate, generally covered with a pile formed of basifixed hairs simple, straight, frizzled or woolly, intricate, or of hairs fixed by the middle, simple or starred, or scaly. The floral capitules[5] are one- few- or many-flowered, large or small, pedunculate or sessile, terminal, solitary or united in cymes more or less compound, umbelliform, or corymbiform, or unilateral, scorpioid. The involucre is nearly cylindrical, ovoid, subglobular, hemispherical, turbinate or campanulate, formed of imbricate bracts, in spiral, green or dry, pointed or obtuse, having at the summit a point or appendage more or less coloured. The outer ones may be gradually transformed into broad and foliaceous laminæ. The receptacle, very variable in form, most frequently flat or slightly convex above, perhaps quite bare. In other cases it is pitted with fossets in which are inserted the flowers and fruit. The margin of these hollows may be fringed with processes more or less developed, and sometimes some of them may bear externally a scale or paleole in the axil of which the flower is inserted.

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[1] CASS. *Dict.* xxxvi. 18.—BAK. *Mart. Fl. bras.* ii. p. ii. 131.—B. H. *Gen.* ii. 233, n. 25.—*Odontoloma* H. B. K. *Nov. gen. et spec.* iv. 43, t. 319.—*Dialesta* H. B. K. *loc. cit.* 45, t. 320.—*Pollalesta* H. B. K. *l. c. cit.* 46, t. 321.—*Adenocyclus* LESS. *Linnæa* iv. 337, fig. 39–41; *Syn.* 147.

[2] DC. *Prodr.* v. 72 (not SCH. BIP. nor SPACH). —DELESS. *Ic. sel.* iv. t. 3.—ENDL. *Gen.* n. 2212.

[3] *Proteopsis* (MART. ex SCH. BIP. *Pollichia* (1863), 378, 433.—BAK. *Mart. Fl. bras* vi. p. ii. 145, t. 35;—B. H. *Gen.* ii. 234, n. 27), the type of which is *Vernonia proteopsidis* DC., a plant often confounded with *Soaresia*, apparently to us should be distinguished in the genus *Vernonia* only as the head of a section characterized by the outer bracts of the involucre being spinescent and the hairs of the pappus being more or less flattened and caducous.

[4] AUBL. *Guian.* ii. t. 314 (*Eupatorium*).—H. B. *Pl. æquin.* ii. t. 99.—H. B. K. *Nov. Gen. et spec.* t. 316–318.—NEES, *Pl. var. Hort. bonn.* t. 5.—HOOK and ARN. *Beech. Voy. Bot.* 298 (*Baccharis*).—WIGHT, *Icon.* t. 829, 1076–1084. —LINK and OTTO, *Ic. pl. sel.* t. 55.—DON, *Prodr. Fl. nepal.* 169.—A. RICH. *Fl. abyss.* i. t. 57.—JAUB. and SPACH, *Ill. pl. or.* t. 358, 359.—BAK. *Mart. Fl. bras. Comp.* 18, t. 4–26.—HARV. and SOND. *Fl. cap.* iii. 48.—HARV. *Thes. cap.* t. 156, 157.—MIQ. *Fl. ind.-bat.* ii. 9.—TORR. *Silgr. Exp. Bot.* t. 2.—A. GRAY, *Proc. Amer. Acad. sc.* v. 115.—GRISEB. *Fl. brit. W.-Ind.* 392; *Cat. pl. cub.* 143; *Symb. ad Fl. argent.* 162.—BEDD. *Fl. sylv. S.-Ind.* t. 225, 226 (*Monosis*).—HANCE, *Seem. Journ. Bot.* vii. 164.—KOTSCH. and PEYR. *Pl. Tinn.* t. 17.—STEETZ, *Pet. Moss. Bot.* 335. —HIERN and OLIV. *Fl. trop. Afr.* iii. 266.—HOOK. F. *Journ. Linn. Soc.* vii. 199.—*Bot. Reg.* t. 522, 1464.—*Bot. Mag.* t. 2477, 3062, 5412, 5698.—WALP. *Rep.* ii. 538, 542 (*Monosis*), 945, 949 (*Cyanopis*); vi. 88 (*Xyphochæta*), 89–99, 702; *Ann.* i. 383 (*Oliganthes*), 384, 389 (*Cyanopis*, *Monosis*); ii. 809, 811 (*Gymnanthemum*), 812 (*Monosis*); v. 144, 146 (*Decaneuron*, *Dialesta*).

[5] The flowers are white, yellowish (?), pink, red purple, violet, or more rarely bluish.

Beside *Vernonia* are placed *Hoplophyllum* and *Albertinia*. The former consists of spinous shrubs from South Africa, with small rigid prickly leaves; elongated capitules, surrounded by dry imbricated bracts; and triquetrous fruit surmounted by a pappus of numerous and many-seried hairs. The latter comprises large

Albertinia brasiliensis.

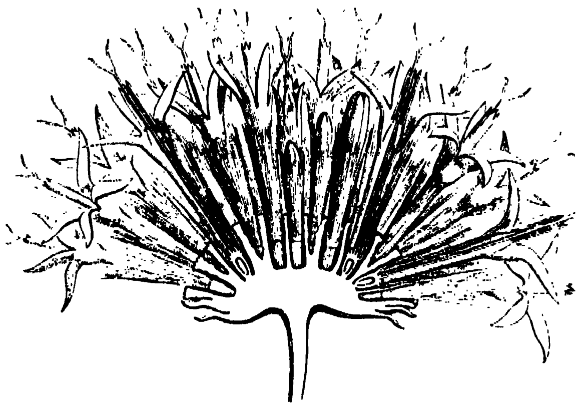

Fig. 39. Long. sect. of capitule.

Brazilian shrubs with membranous leaves, terminal cymes of capitules, the alveolate receptacle of which bears the flowers, afterwards the encased 10-sided fruit (fig. 39), with short bracts more or less united to the receptacle, and surmounted by a pappus of numerous slender hairs; those of the outer series shorter and more numerous.

Vanillosmopsis (fig. 40), by its flowers very near *Albertinia* and *Vernonia*, is, in this series, the analogue of *Gundelia*, inasmuch as the inflorescence, instead of being simple capitules, is arranged in numerous few-flowered glomerules, with a centrifugal evolution, scattered pretty equally over the common receptacle. They are Brazilian shrubs. *Soaresia*, a large setaceous herbaceous plant, with short sessile many-nerved leaves, from the same country, belongs to the same secondary group because its inflorescence, instead of being simple and bearing flowers of a centripetal evolution, is a capitule of few-flowered glomerules (the flowers generally

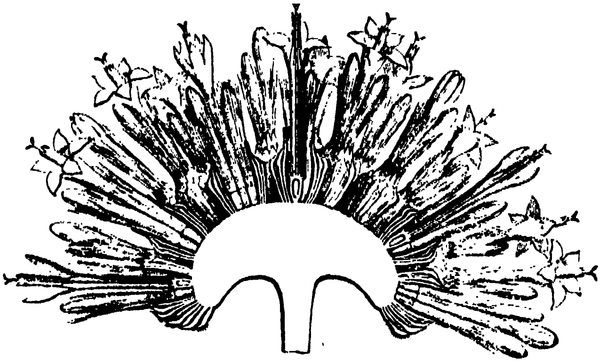

Fig. 40. Long. sect. of cymiferous capitule.

numbering four). The fruit, 10-sided, is surmounted by a pappus of flattened rigid hairs, finely barbelate at the margin. The inflorescences are sessile near the end of the branch and form together large terminal and corymbiform cymes. Each glomerule has its own involucel formed of several imbricated bracts.

In *Ethulia* and half a dozen other genera (some very doubtful) placed near it (*Pleurocarpæa*, *Bothriocline*, *Lamprachænium*, *Centratherum*, *Gutenbergia*, *Erlangea*, *Corymbium*), the fruit is surmounted by a pappus of generally a few caducous hairs, or none; and the inflorescences, simple capitules, are solitary or terminal, pedunculate or sessile, or united in a compound terminal corymb, oftener sessile on the ramified axes of a foliaceous inflorescence. In *Corymbium*, from South Africa, among others, each flower constitutes a capitule, surrounded by two large bracts forming an involucre, with two or three smaller bracts at the base.

Lychnophora, which has given name to a distinct subseries (*Lychnophoreæ*), is distinguished, in this group, by the fact that the capitules are formed of only a few or even a single flower, and are surrounded by an involucre of a variable number of imbricated bracts. The capitules themselves are united in a short spike, globular or nearly so, at the end of the branches; each occupies the axil of one of the lower leaves or of the bracts which replace them. The fruit is crowned with a variable pappus generally double. The outer hairs, short and persistent, are wanting in those called *Haplostephium* (generically however inseparable from

Eupatorium triplinerve.

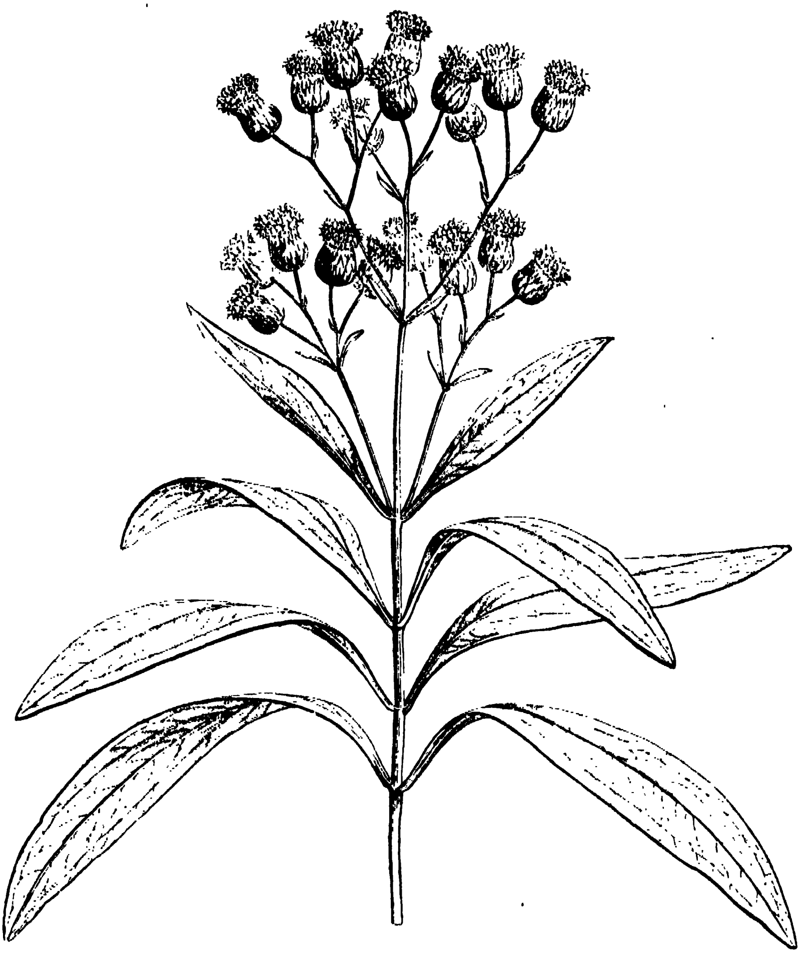

Fig. 41. Floriferous branch.

Beside these are ranged *Chresta* and *Spiracantha* and *Rolandra*, somewhat exceptional in habit and in the shallow divisions at the summit of the style; the capitules are one-flowered. All these genera are American. Likewise *Elephantopus* the many-flowered capitules of which are arranged on a common receptacle surrounded by broad biseriate bracts generally eight in number. But this remarkable genus is found, besides, in all the tropical regions of the old world.

Sparganophorus has given name to a subseries (*Sparganophoreæ*), which includes also the genera *Telmatophila* and *Pacourina*. It consists of plants having axillary or lateral sessile capitules with an involucre of numerous imbricated bracts. In *Telmatophila*, the bracts of the involucre are ordinarily spinescent and the hairs of the pappus are very unequal. In *Sparganophorus*, the fruit is surmounted by a cupule almost suberose without pappus; and in *Pacourina*, the capitules of which are voluminous, this cupule is surmounted by a short pappus of numerous hairs. The latter consists exclusively of tropical American plants as also does *Pithecoseris*, while *Sparganophorus* is found besides throughout tropical Africa and in Madagascar.

Eupatorium cannabium.

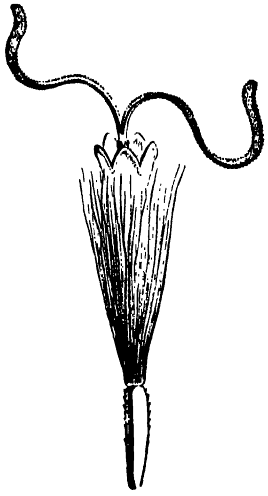

Fig. 42. Flower (⅘).

Just as, by the majority of its genera with all regular flowers, the group *Vernonieæ* is allied to the *Carduceæ*, so also it is connected with the *Cichoreæ* by *Stokesia*, a North American genus, in which all the flowers are ligulate and the fruit surmounted by a pappus formed of four or five elongated and caducous hairs.

Eupatorium (fig. 41–43) has been made the type of a separate tribe (*Eupatorieæ*), differing generally from the *Vernonieæ* proper in that the base of the anthers is entire or scarcely prolonged to an obtuse auricle, and the style-branches, rounded or slightly flattened, are more or less obtuse at the summit and covered with short papillæ. These are plants with alternate or opposite leaves, and the flowers are white, blue, or pink, sometimes straw or ochre coloured, but never a pure yellow. All these characters, in the aggregate only of secondary importance, do not warrant us in placing the *Eupatorieæ* in any other series than that of the *Vernonieæ*. The true *Eupatorieæ*, also named *Agerateæ*, have generally anthers prolonged upwards in an appendage, five-sided achenes, while *Piqueria* and analagous types in which this apical appendage is short, obtuse or even altogether absent, have been placed in a different group. But this difference does not appear to us to have a generic value. The same is the case as to the number of florets each capitule contains; and *Mikania* (fig. 43), distinguished as a genus because the capitules are generally four-flowered, while the *Eupatorieæ* have five flowers or more, should apparently be referred to the latter simply as a section. Beside *Eupatorium* are placed the closely allied genera: *Ageratum*, *Hofmeisteria*, ? *Aschenbornia*, *Adenostemma*, ? *Lomatozona*, *Sclerolepis Brachyandra*, ? *Leptoclinium*, *Stevia*, *Carphochæte*, *Carminatia*, *Kuhnia*, which, for the most part, differ only in characters of very

Eupatorium (*Mikania*) *parviflorum.*

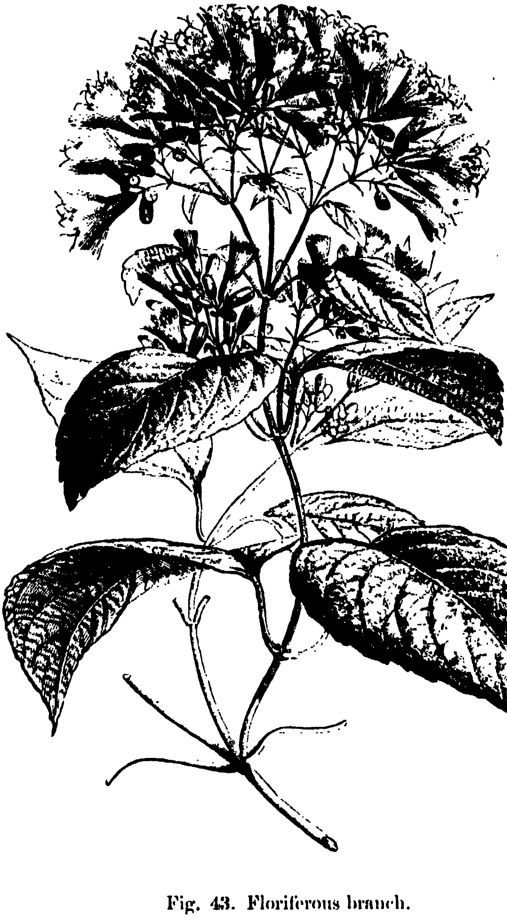

Fig. 43. Floriferous branch.

little importance, and *Adenostyles*, which evidently connects this series to *Senecio* by the intervention of the *Petasiteæ*.

V. ASTER SERIES.

The name *Aster*[1] (fig. 44, 45) indicates the star-like arrangement of the inflorescence, in which, in fact, are two kinds of flowers. Those at the circumference (or base) of the capitule,

Aster grandiflorus.

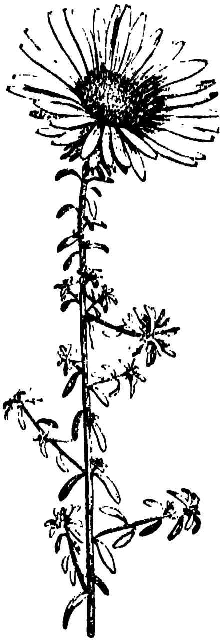

Fig. 44. Floriferous branch.

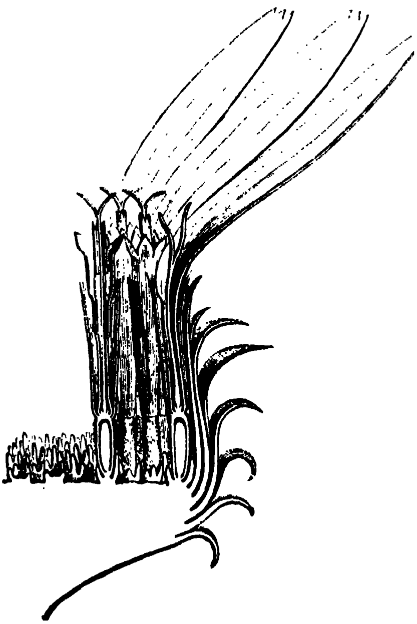

Fig. 45. Portion of capitule ($\frac{4}{1}$).

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[1] T. *Inst.* 481, t. 274.—L. *Gen.* n. 954.—ADANS. *Fam. des pl.* ii. 124.—J. *Gen.* 181.—LAMK. *Dict.* i. 301; Suppl. i. 86.—DC. *Prodr.* v. 226.—NEES, *Gen. et spec. Aster.* 46.—SPACH, *Suites à Buffon*, x. 242.—ENDL. *Gen.* n. 2301.—A. GRAY, *Proc. Amer. Acad.* vi. 539; vii. 352.—B. H. *Gen.* ii. 271, n. 136.—*Amellus* ADANS. *loc. cit.* 125 (not L.).—*Pinardia* NECK. *Elem.* i. 5.—*Heleastrum* DC. *Prodr.* v. 263.—*Biotia* DC. *loc. cit.* 264.—*Noticastrum* DC. *loc. cit.* 279.—*Leucopsis* (*Haplopappi* sect.) DC. *loc. cit.* 348.—*Linosyris* CASS. Dict. xxxvii. 476 (part.); DC. *Prodr.* v. 352 (part.).—*Crinitaria* CASS. Dict. xxvii. 475 (*Crinita* MŒNCH).—*Galatea* CASS. *Dict.* xviii. 56 (*Galatella* DC. *Prodr.* v. 254).—*Kalimeris* CASS. *Dict.* xxiv. 324 (*Calimeris*, NEES, *Aster.* 225).—*Eucephalus* NUTT. *Trans. Amer. Phil. Soc.* ser. 2. vii. 298).—*Xylorhiza*

called radial[1] flowers, are hermaphrodite, fertile or rarely sterile, and furnished with an irregular, ligulate corolla, with a limb divided at the summit into two or three indistinct valvate teeth, or entire. The colour of this corolla is variable,[2] but it is not yellow like those of the central flowers of the capitule,[3] known as discal flowers,[4] which are regular, tubular, with a limb of five valvate lobes. These regular flowers are fertile, or only some of them, or they may be all sterile.[5] The top of the capitular receptacle is flat or slightly convex, and has generally between the flowers, small unequal or irregularly dentelate processes,[6] corresponding to the margins of the fossets in which the flowers are inserted. The bracts of the involucre, hemispherical or oftener campanulate, are in many series, inserted in a spiral order, imbricate, often scarious at the margin, green at the top, more or less pointed; either nearly equal or the smaller the more outward. All the flowers have a pappus of fine hairs, more or less scabrous, arranged in several series, equal or unequal, the outer sometimes very short.[7] In the regular flowers only are normally found syngenesious stamens, with the base of the anthers obtuse, not appendiculate, and the summit surmounted by a triangular blade, a prolongation of the connective.[8] The styles of the irregular flowers have two slender branches, one a little compressed and obtuse, recurved; and those of the regular flowers two wider and more flattened, surmounted by an appendage more or less attenuated and charged with papillæ.[9] The fruit is ordinarily more or less compressed, without or with only a few (1–4) ridges, and the margins often nervelike; it is surmounted by a pappus described above in the flower, and encloses an exalbuminous seed, with thick and fleshy embryo and inferior radicle.

NUTT. *loc. cit.*297 (*Arctogeron* DC. *Prodr.* v. 260. —*Rhinactina* LESS. *Linnæa*, vi. 149.—*Tripolium* NEES, *Aster.* 152.—DC. *Prodr.* v. 253 (part.).—*Dœllingeria* NEES, *Aster.* 177.—*Symphyotrichum*, NEES, *Aster.* 135.—*Homostylium* NEES, *Linnæa*, xviii. 513.—*Hersilea* KL. *Waldem. Reis. Bot.* 75, t. 83.—? *Psychrogeton* BOISS. *Fl. or.* iii. 156.—B. H. *Gen.* ii. 1233.

[1] *Radius* (*Corona* T.).

[2] White, pink, purple, violet or blue.

[3] *Flores heterocromi.*

[4] *Discus* T.

[5] This difference of sex (or rather this kind of polygamy) is indicated by the words *Capitula heterogama.*

[6] Fringe (*Fimbrillæ*).

[7] Developed in succession, but all after the corolla (PAYER).

[8] The pollen of the Astereæ (and Inuleæ) is generally ovoid; three longitudinal furrows; spinous; in water, a slightly depressed sphere; three bands on which three large papillæ (H. MOHL, *Ann. sc. nat.* ser. 2, iii. 315).

[9] Most frequently the bands of stigmatic papillæ are salient and descend to the origin of the outer skin.

We refer to *Aster* as sections: *Turczaninowia*[1] and *Diplopappus*,[2] which have the outer hairs of the pappus shorter than the others; *Bellidiastrum*,[3] in which the leaves are all collected in a rosette, and the capitules are solitary at the summit of a bare axis, as in *Bellis perennis*; *Boltonia*,[4] Asiatic and American plants having the hairs of the pappus short, somewhat flattened, except some which are rigid and nearly as long as the fruit; *Heteropappus*,[5] Asiatic species in which the hairs of the pappus are more slender and longer in the central fruits than in those of the circumference where they are slightly flattened; *Psilactis*,[6] American plants, in which the pappus of the circumferential fruit consists of smooth or striated hairs or disappears altogether; *Distasis*,[7] from the same country, in which some of the hairs of the pappus are dilated while others remain slender; *Heterochæta*,[8] old-world species having also the hairs of the pappus dissimilar, the outer being generally the shortest and most dilated; *Sericocarpus*,[9] perennial herbs of North America, in which the flowers, similar in construction to the Asters proper, are surrounded by an involucre of pluriseriate bracts, scarious or furnished with an herbaceous appendage; *Podocoma*,[10] South American herbs the fruit of which is more or less extended in a beak at the summit; *Corethrogyne*,[11] downy herbs of California, the flowers of which are those of the true Asters, with styles having a barbed appendage; *Townsendia*,[12] cæspitose or many-stemmed herbs of North America, having the hairs of the pappus unequal, uniseriate, barbelate or scabrous and more or less dilated at the base; *Dieteria*[1] and *Machæranthera*,[2] from North America, having stylary branches with narrow appendages, fruit with numerous thick nervures and leaves often incised or dissected; *Homochroma*, from Africa, the ligulate flowers of which are exceptionally yellow, like those of the disk; *Callistemma*,[3] (the Marguerite of our gardens), Asiatic herbaceous plants, having the bracts of their large involucre unequal, the outer foliaceous, and the fruit elongated, compressed, surmounted by a pappus the outer hairs of which are short. Thus constituted, the genus *Aster* includes about 300 species,[4] from all the temperate and cool regions of the globe, especially North America, rare in South America and the Andes, South Africa, &c.

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[1] DC. *Mém. Comp.* t. 4; *Prodr.* v. 257.—Endl. *Gen.* n. 2304.

[2] Cass. *Dict. sc. nat.* xiii. 308.—DC. *Prodr.* v. 275.—Endl. *Gen.* n. 2321.

[3] Mich. *Nov. Gen.* t. 29.—DC. *Prodr.* v. 226.—Cass. *Dict.* xxxvii. 494.—Endl. *Gen.* n. 2300.—*Margarita* Gaud. *Fl. helv.* v. 335.

[4] Lhér. *Sert. angl.* 27.—DC. *Prodr.* v. 301.—Endl. *Gen.* n. 2343.—B. H. *Gen.* ii. 269, n. 131.—*Hisutsua* DC. *Prodr.* vi. 44.—Endl. *Gen.* n. 2664.—*Asteromœa* Bl. *Bijdr.* 901.—DC. *Prodr.* v. 302.—Endl. *Gen.* n. 2346.—*Dichætophora* A. Gray, *Pl. Fendler.* 73.

[5] Less. *Syn. Comp.* 189.—DC. *Prodr.* v. 297.—B. H. *Gen.* ii. 269, n. 130.

[6] A. Gray, *Pl. Fendler.* 71.—B. H. *Gen.* ii. 269, n. 129.

[7] DC. *Prodr.* v. 279.—Endl. *Gen.* n. 2324.—B. H. *Gen.* ii. 268, n. 127.

[8] DC. *Prodr.* v. 282 (part.).

[9] Nees, *Aster.* 148.—DC. *Prodr.* v. 261.—Endl. *Gen.* n. 2310.—B. H. *Gen.* ii. 270, n. 135.

[10] Cass. *Bull. Soc. philom.* (1817), 137; *Dict.* xlii. 60.—R. Br. *App. Sturt Exp.* 17.—DC. *Prodr.* v. 260.—Endl. *Gen.* n. 2307.—*Asteropsis* Less. *Syn. Comp.* 188.—*Podopappus* Hook. and Arn. *Comp. Bot. Mag.* ii. 50.—*Moritzia* Sch. bip. *exs. Mor.* n. 1321.—*Ixiochlamys* F. Muell. and Sond. *Linnæa*, xxv. 466.

[11] DC. *Prodr.* v. 215.—Endl. *Gen.* n. 2298.—A. Gray, in *Proc. Amer. Acad.* vii. 351.—B. H. *Gen.* ii. 270, n. 132.

[12] Hook. *Fl. bor.-amer.* ii. 16, t. 119.—Endl. *Gen.* n. 2304^{1}.—B. H. *Gen.* ii. 268, n. 126.

Beside *Aster* are placed the genera (often difficult to distinguish with certainty): *Calotis*, *Minuria*, *Monoptylon*, *Eremiastrum*, *Chætopappa*, *Gymnostephium*, *Detris*, *Mairia*, *Charieis*, *Amellus*, *Shawia*, *Hinterhubera*, *Sommerfeldtia*, *Celmisia*, *Pleurophyllum*, *Diplostephium*, *Commidendron* and *Erigeron* (fig. 46–50).

The Daisies (*Bellis*) belong to a secondary group in which the radial flowers have likewise a corolla of variable colour, but not yellow like those of the disk. The former are expanded, ligulate

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[1] Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 300.

[2] Nees, *Aster.* 224.—DC. *Prodr.* v. 261.—Endl. *Gen.* n. 2311.

[3] Cass. *Dict.* v. Suppl. 45.—*Callistephus* Cass. *Dict.* xxxvii. 491.—DC. *Prodr.* v. 274 (part.).—Endl. *Gen.* n. 2320.—B. H. *Gen.* ii. 270, n. 134.

[4] Though more than double have been described. Jacq. *Hort. vindob.* t. 8; *Fl. austr.* t. 400 (*Doronicum*), 425.—W. *Hort. berol.* t. 67.—Cav. *Icon.* t. 233.—Sibth. *Fl. græc.* t. 849 (*Linosyris*).—Brot. *Phyt. Lus.* t. 29.—H. B. K., *Nov. Gen. et spec.* iv. t. 91, 332, 332 *bis.*—Colla, *Hort. rip.* t. 12; in *Mém. Acad. Tur.* xxxviii. t. 25 (*Baccharis*).—Waldst. et Kit. *Pl. hung.* t. 30; 68 (*Chrysocoma*), 109.—Sweet, *Brit. fl. Gard.* t. 234.—Torr. et Gr. *Fl. N.-Amer.* ii. 99 (*Dieteria*), 102 (*Sericocarpus*), 104; 185 (*Townsendia*), 187 (*Boltonia*).—Torr. *Fl. N. York*, t. 50-52.—Vent. *Jard. Cels.* t. 33.—Ledeb. *Ic. Fl. ross.* t. 498.—Royle, *Ill. Fl. himal.* t. 58 (*Calimeris*).—Remy, in *C. Gay Fl. chil.* iv. 9.—Phil. *Linnæa*, xxviii. 729; xxxiii. 131.—A Gray, *Proc. Amer. Acad.* vii. 351 (*Corethrogyne*).—Miq. *Ann. Mus. lugd.-bat.* ii. 170 (*Biotia ?*).—Wedd. *Chlor. andin.* i. 187, t. 33 A.—Hook. *Icon.* t. 486.—Reichb. *Ic. Fl. germ.* t. 905–907; 908–910 (*Gelatella*).—Harv. and Sond. *Fl. cap.* iii. 69.—Chapm. *Fl. S. Unit. St.* 198.—Fr. et Sav. *Enum. Pl. jap.* i. 221.—Boiss. *Fl. or.* iii. 157.—Willk. and Lge. *Prodr. Fl. hisp.* ii. 35.—Gren. and Godr. *Fl. de Fr.* ii. 100; 104 (*Bellidiastrum*).—*Bot. Reg.* t. 183, 273, 340, 1487, 1495, 1500, 1509, 1517, 1527, 1532 (*Eurybia*), 1537, 1571, 1597, 1614, 1619, 1636, 1656, 1693, (*Diplopappus*), 1818.—*Bot. Mag.* t. 199; 1169 (*Arnica*), 2381; 2554 (*Boltonia*), 2707, 2718, 2942, 2995; 3382 (*Diplopappus*), 4557.—Walp. *Rep.* ii. 558 (*Corethrogyne*), 559, 575 (*Galatella Townsendia*), 576 (*Sericocarpus*), 577 (*Diplopappus*), 586 (*Dieteria*), 957; vi. 118 (*Corethrogyne*) 119; 120 (*Homostylium*), 122 (*Heterochæta*), 716; *Ann.* i. 405; ii. 821; 822 (*Townsendia*), 823 (*Callistephus*, *Noticastrum*); v. 172; 173 (*Galatella*), 174 (*Calimeris*), 175 (*Machæranthera*), 179 (*Diplopappus*). *Aster* and *Solidago* in the old herb (A. Gray, *Proc. Amer. Acad.* xvii. 164, 177).

(fig. 51) with a pappus rarely absent, especially in the true *Bellis*,

Erigeron (*Conyza*) *longifolium.*

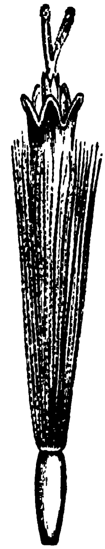

Fig. 47. Discal flower (☿).

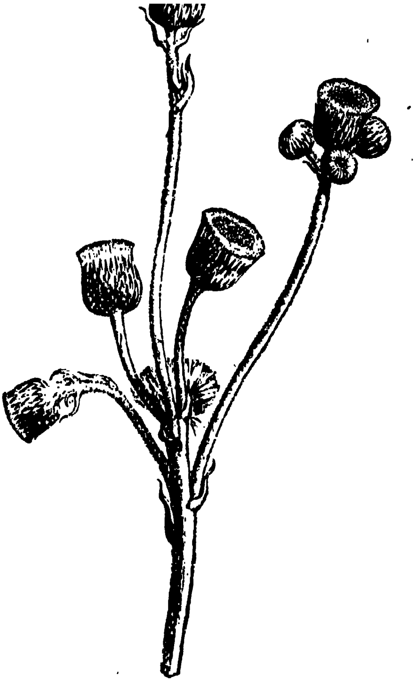

Fig. 46. Inflorescence.

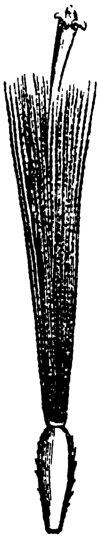

Fig. 48. Radial flower.

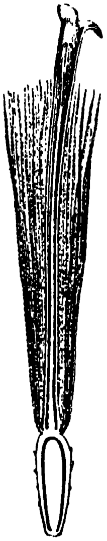

Fig. 49. Long. sect. of radial flower.

most frequently formed of hairs or scales, more rarely of both, occasionally with rigid points. Beside this genus are placed *Erodiophyllum* (?), *Keerlia*, *Aphanostephus* (?), and *Rhynchospermum*.

Erigeron acre.

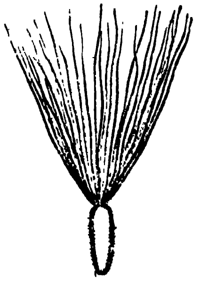

Fig. 50. Fruit (♀).

Grangea has also given name to a sub-series (*Grangeeæ*), in which it is ranged with *Lœstadia*. They are Asters with female flowers furnished with a short corolla not extending beyond the flowers of the disk; hence the globular form of the entire capitule. The pappus is absent or short, formed of hairs, down or scales of little prominence. All are herbs, often hairy, with an involucre formed of bracts nearly equal, except where the outer ones are dilated to foliaceous laminæ.

In *Chrysocoma*, which also forms a separate subdivision, belonging to the old world, the flowers are of two kinds in the disk-like capitules. Those of the ray are slender, or furnished with a small erect ligule, rarely slightly expanded. The pappus is formed of numerous hairs, and all the flowers are generally of the same colour. The herbaceous, frutescent or arborescent plants ranged beside *Chrysocoma* belong to the genera *Adelostigma*, *Haastia*, *Thespis*, and *Psiadia*. These are Asiatic and especially African; they abound in the Mascarene, Madagascar and neighbouring islands. The stem is generally woody, and the flowers, very analogous to those of *Erigeron* of the section *Conyza*, are diamorphous: those of the ray furnished with a ligule often entire, short or more or less elongate and expanded; those of the disk regular.

Bellis perennis.

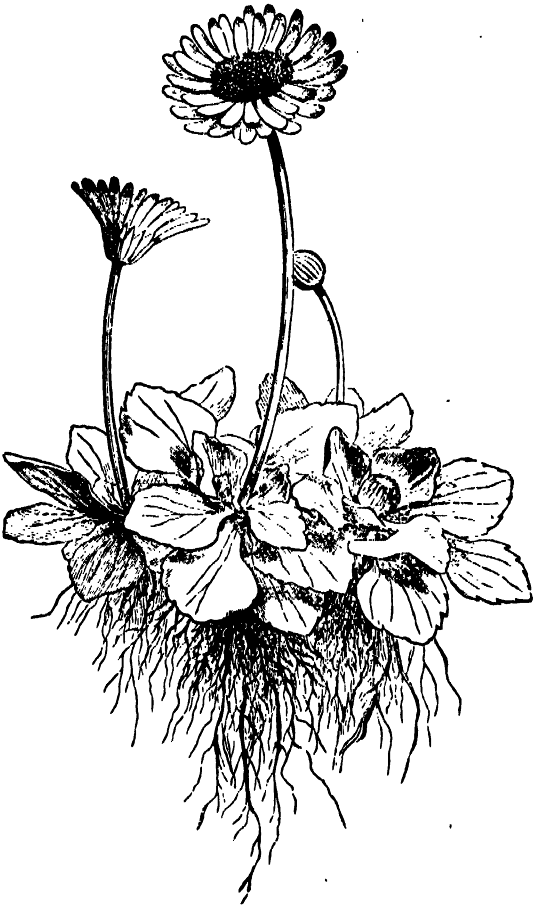

Fig. 51. Habit.

With an analogous organization, the *Baccharideæ* have most frequently polygamous, diœcious or submonœcious flowers; the fruit is surmounted by a pappus of slender hairs. They are woody American plants of the genera *Baccharis* and (?) *Parastrephia*. Among the former the capitules of some plants contain only male or hermaphrodite flowers and the ovary never becomes a fertile fruit, while in others the capitules are formed exclusively of female and fertile flowers inserted on a bare receptacle or separated by fringes or encircled by well-developed concave paleoles. In the latter case the flowers are said to be monoecious.

Pteronia, from South Africa, gives name (*Pteronieæ*) to a group in which the central and circumferential flowers are of the same colour (*Homochromeæ*), generally yellow, with the flowers at the base female and not unfrequently furnished with a ligulate corolla, but sometimes also like those of the disk and all, like them, hermaphrodite. To this small subseries (which forms a transition to the *Inuleæ*) belong also *Fresenia* and *Rochonia*, which closely approach *Aster* and *Mairia*, differing chiefly in the uniform colour of all their flowers. Sameness of colour is also found in the *Solidagineæ*, a name derived from *Solidago*, European, Asiatic, and especially American plants, the flowers of which have a pappus formed of numerous unequal hairs, arranged in two or three series. Next to these are placed *Ericameria*, *Lepidophyllum*, and *Hysterionica* (fig. 54); then *Steriphe* and (?) *Remya*, the

Solidago Virga-aurea.

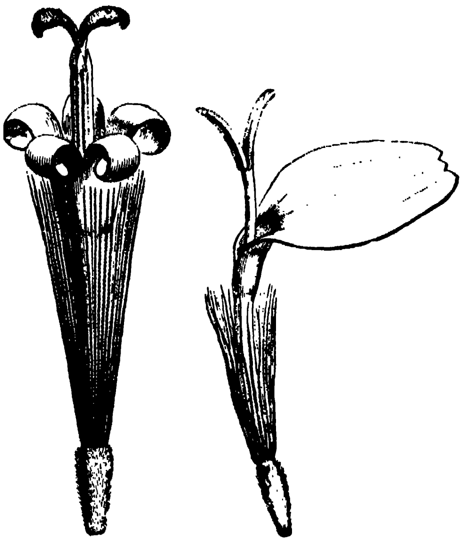

Fig. 52. Floret (☿). Fig. 53. Semi-floret.

Hysterionica (*Grindelia squarrosa*).

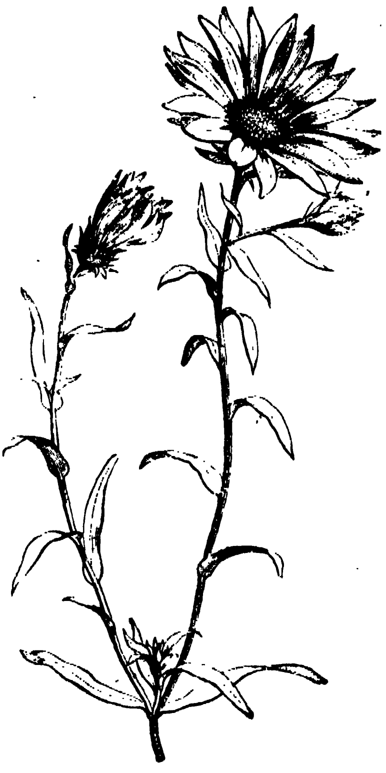

Fig. 54. Flowering branch.

pappus of which has few hairs in a single series, and *Xanthocephalum*, plants of western America, with no pappus or only a few paleaceous scales.

Inula has been referred to a separate tribe of this family. The flowers, generally homochromous, are of two kinds, as in most of the true Asters; those of the centre regular and those of the ray irregular, ligulate. All are fertile and furnished with a pappus formed of a very variable number of hairs, equal or unequal, smooth or finely barbelate. The upper surface of the receptacle is flat or slightly convex, scattered with fossets or areoles. The corolla is ligulate, often reflexed at the time of anthesis and has generally two or three teeth; the regular corollas have five valvate lobes. The stamens (fig. 56) are pointed or acuminate at the top and the base of the cells is prolonged in short or oftener elongate, setiform, ciliate, or barbelate auricles. The styles have two slender branches, scarcely

Inula (Corvisartia) Helenium.

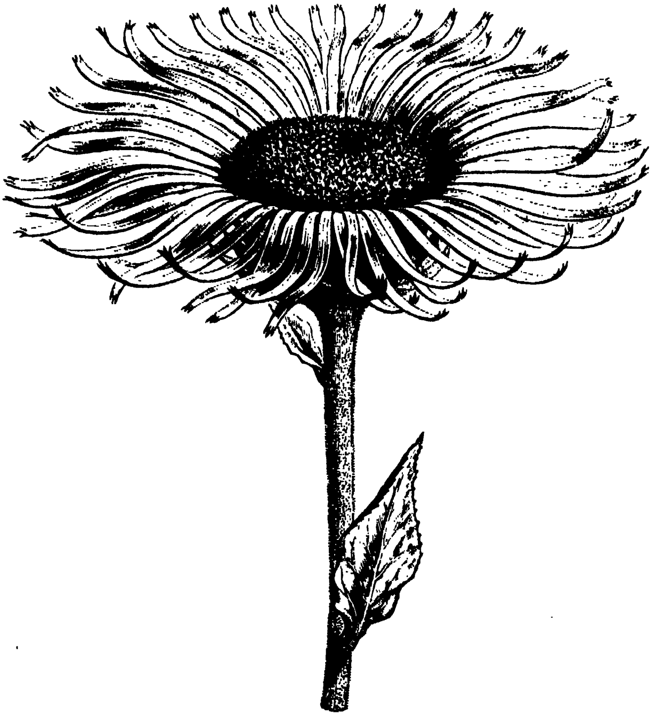

Fig. 55. Inflorescence.

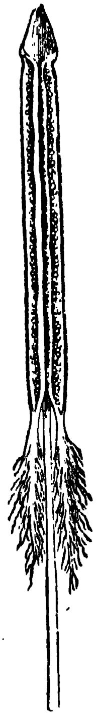

Fig. 56. Stamen ($\frac{10}{1}$).

flattened in the female flowers, a little wider, more obtuse or subspathulate in the hermaphrodite. The fruit is crowned with a pappus of numerous or few hairs in one or many series; from which it is evident that this character here, as elsewhere, has but moderate importance. Beside *Inula* are placed *Pulicaria*, (?) *Porphyrostemma*, *Codonocephalum*, *Bojeria*, *Cypselodonta*, and (?) *Minurothamnus*, as also *Carpesium* and (?) *Amblyocarpum*, exceptional in this group by the absence of a pappus.

The *Buphthalmeæ* differ from the true *Inuleæ* only in their receptacle being charged with rigid scales; a very artificial character without which *Inula* might strictly be combined with *Buphthalmum*. Beside the latter are placed the genera *Nablonium*, *Anvillea*, (?) *Gymnarrhena*, *Geigeria*, *Rhantherium*, *Oligodora*, and *Ondetia*.

Buphthalmum salicifolium.

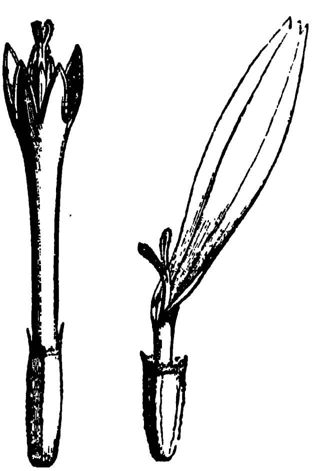

Fig. 58. Floret ($\frac{4}{1}$). Fig. 57. Semi-floret.

Leyssera, *Arrowsmithia*, and *Macowania*, which are African, together with *Podolepis*, Australian herbs, constitute a small group (*Leyssereæ*) in which the heterogamous capitules have flowers destitute of scales, those of the disk sterile, or fertile, with truncated style, and leaves flat or recurved at the margin.

Gnaphalium has also given its name to a small group (*Gnaphalieæ*), in which the capitules, androgynous or homogynous and discoid, have an involucre of scarious, often translucent bracts, with or without caducous scales, and the stylary extremity, whether single or double, truncate. With them are ranged the genera, differing but slightly: (?) *Phagnalon*, *Chevreulia*, (?) *Anaphalis*, (?) *Luciliopsis*, *Oligandra*, *Tafalla*, *Amphidoxa*, (?) *Demidium*, (?) *Stuartina*, and (?) *Chiliocephalum*, also the *Helichryseæ*, in which the bracts of the involucre are scarious or petaloid, coloured, persistent (whence the common name Immortal or Everlasting) radiant or rarely membranous, or subherbaceous and linear. Besides *Helichrysum*, they include *Leptorhynchus*, (?) *Pachyrhynchus*, *Quinetia*, *Scyphocoronis*, *Millotia*, *Podotheca*, which have a pappus formed of hairs or more rarely of paleoles, and

Ixodia, destitute of a pappus, as likewise *Humea*, *Acomis*, *Eriochlamys*, and *Toxanthus*, Australian genera.

Craspedia is also the head of a small subseries (*Craspedieæ*), comprising plants, generally Australian, with homogamous capitules composed of a very variable number of flowers, not unfrequently only one or two. These again are united in a terminal compound capitule, bare or surrounded by a common involucre; and most frequently (except in some true Craspedias and *Chthonocephalus*), the flowers are without a pappus. *Eriosphæra*, from the Cape, has many-flowered capitules.

Cæsulia, from the East Indies, forms by itself a subseries (*Cæsulieæ*) in which the capitules are axillary, one-flowered, united in sessile compound capitules, with a fruit destitute of pappus.

In another subseries to which *Stæbe* gives name (*Stæbeæ*), the capitules are one-flowered, heterogamous, and the circumferential flowers often have ligulate corollas, sometimes as little developed as possible; all the hermaphrodite flowers may be fertile. They are shrubs or herbs with ericoid foliage from South Africa. The following genera with more- or many-flowered capitules cannot be separated from the above: *Relhania*, *Elytropappus*, (?) *Lachnospermum*, *Syncephalum*, (?) *Rosenia*, (?) *Anaglypha*.

In the *Filageæ*, which derive their name from the genus *Filago*, the capitules are androgynous, with involucres formed generally of few or translucent bracts. The female flowers occupy the axil of these bracts or of hairs which are attached to or even envelop them. The style is often undivided in the sterile flowers, while in the hermaphrodite flowers it has two slender branches not truncated. Ordinarily the stem is low, herbaceous, covered, as are also the small leaves, with a whitish down, in the neighbouring genera of *Filago*: (?) *Ifloga*, (?) *Symphyllocarpus*, while the stems are shrubby, the leaves larger and the fruits ridged, in the Indian and African genera: *Blepharispermum*, *Cylindrocline* and *Athroisma*.

Tarchonanthus, *Brachylæna* and *Synchodendron* are also shrubs or trees, forming a small group (*Tarchonantheæ*), with capitules generally diœcious and discoid and an involucre of coriaceous bracts. They inhabit South Africa and Madagascar.

Finally, by a subseries named from *Placus* (*Placeæ*), the *Inuleæ* approach extremely near the *Astereæ* of the genus *Erigeron*, differing only in two characters: the anthers having below a se or mucronate prolongation, and the style undivided or with two filiform and obtuse branches at the summit. The capitules are androgynous, or polygamous, or disciform and the involucral bracts are dry or herbaceous, the interior sometimes scarious. Besides *Placus*, this group includes *Tessaria*, shrubs from temperate Western America, *Epaltes*, *Denekia*, *Thespidium*, *Coleocoma*, (?) *Nanothamnus*, also the *Sphæranthææ* in which the capitules are small and agglomerated in globular compound capitules, with female flowers having a very slender corolla: they are *Sphæranthus*, *Pterocaulon*, and *Monarrhenus*.

VI. THE MARIGOLD SERIES.

The Marigolds[1] (fig. 59–63) have, like the Asters, two kinds of flowers: those of the circumference of the capitules, irregular, female, and fertile; those of the interior, male or hermaphrodite, but sterile.[2] The receptacle is flat or slightly convex and bare. The involucral bracts are nearly equal, arranged in one or two series, contiguous, imbricate at their thin and narrow margin. The ligulate flowers contain an inferior uniovulate ovary, externally gibbous, a style with two attenuated branches, sometimes rudimentary stamens and no calyx. In the regular flowers the ovary is sterile; the calyx is wanting, and the corolla, regular, valvate, bears five syngenesious stamens the anthers of which are surmounted by an acuminate lamina prolonged below in two linear and mucronate processes[3] of the cells.[4] The style is present, surmounting an epigynous disk, and its extremity is a papillose cone, entire or bident. The fruit is an incurved achene, dissimilar,[5] unequally muricate at the back or on both sides; and the erect seeds contain under a very thin coat, a fleshy embryo with inferior radicle and two thick cotyledons, free or united at their inner surface. The Marigolds are herbaceous plants, annual or perennial, generally covered with a fine down more or less glandular and odorous. The leaves are alternate, sinuate or dentate. The flowers are united in stipitate capitules at the ends of the branches.[1] There are only five or six species,[2] though three or four

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[1] *Calendula* L., *Gen.* n. 990 (part.).—Neck. *Elem.* n. 75.—J. *Gen.* 183.—Poir. *Dict.* vii. 274.—Gærtn. *Fruct.* t. 168.—Cass. *Op. phyt.* ii. 75.—Less. *Syn.* 90.—DC. *Prodr.* vi. 461.—Spach, *Suit. à Buffon*, x. 110.—Endl. *Gen.* n. 2822.—Payer, *Fam. nat.* 25.—B. H. *Gen.* ii. 454, n. 598.—*Caltha* T., *Inst.* 498, t. 284 (not L.).—Vaill. *Act. Acad. par.* (1720), 288.—Adans. *Fam. des pl.* ii. 126.—Mœnch, *Méth.* 585.

[2] "Capitules heterogamous."—"Polygamy necessary."

[3] These prolongations, belonging to two adjacent anthers, often unite, margin to margin, but are always separable.

[4] The pollen is ovoid, with three spinous furrows (H. Mohl, *Ann. sc. nat.* ser. 2, iii. 216).

[5] The longer generally, more curved and more abundantly muricated on the back, the more exterior they are.

Calendula officinalis.

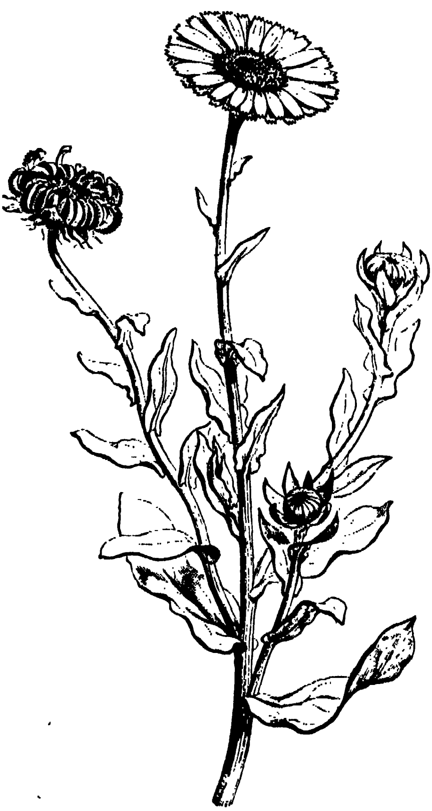

Fig. 59. Floriferous branch.

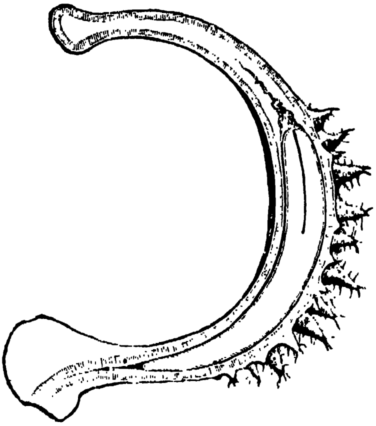

Fig. 61. Long. sect. of fruit ($\frac{5}{1}$).

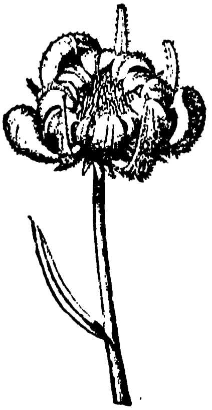

Fig. 60. Compound fruit.

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[1] With yellow or orange flowers having often a strong but not agreeable odour.

[2] JACQ. *Fragm.* t. 103.—CAV. *Icon.* t. 5.—SIBTH. *Fl. græc.* t. 920.—GUSS. *Enum. pl. Inam.* t. 6.—DESF. *Fl. atl.* t. 245.—REICHB. *Ic. Fl. germ.* t. 890, 891.—VIV. *Fl. lib. Fragm.* t. 20, fig. 2; t. 26, fig. 2.—MIQ. *Fl. ind.-bat.* ii. 105.—BOISS. *Diagn. or.* ser. 2, vi. 106; *Voy. Esp.* t. 99; *Fl. or.* iii. 416.—GREN. and GODR. *Fl. de Fr.* ii. 197.—*Bot. Mag.* t. 3204.—WALP. *Rep.* vi. 273; *Ann.* ii. 920; v. 348.

times as many have been described. They are natives of middle and southern Europe, the Mediterranean, the Levant and the islands west of northern Africa.

Calendula arvensis.

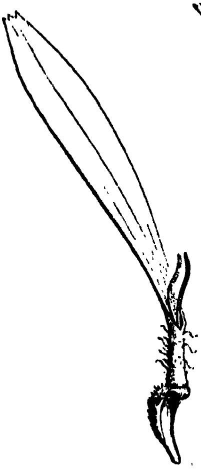

Fig. 62. Semi-floret ($\frac{3}{1}$).

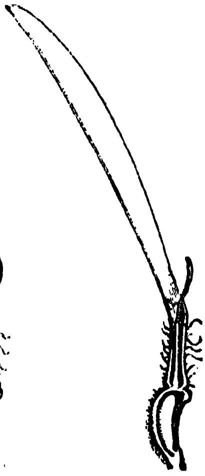

Fig. 63. Long. sect. of semi-floret.

Beside the Marigolds are placed some genera, often very near, in which the fruit may be winged, triquetrous, straight or recurved instead of incurved. These are: *Dimorphotheca*, *Ruckeria*, *Tripteris*, *Osteospermum*, *Oligocarpus*, *Eriachænium*, and *Dipterocome*. In the last the stamens are united, not only by the anthers, but by the filaments also; and in *Osteospermum*, the fruit is more or less fleshy externally.

We may place in a subseries of the group *Calenduleæ*, *Arctotis* (fig. 64, 65), which has also been made a separate tribe, and which has heterogamous capitules, that is, having the interior or discal flowers regular and those of the circumference or ray irregular and ligulate. The upper surface of the receptacle is flat or slightly concave or convex, or with small areoles. The bracts of the involucre are in several series, imbricated and unequal, generally the shorter the more outward. Most of the flowers have a fertile uniovulate gynœcium. The regular only are hermaphrodite; and if the ligulate occasionally have stamens, they are rudimentary and very small. Those of the regular flowers are syngenesious, with anthers pointed or acuminate at the summit, and at the base entire or prolonged in short auricles.

Arctotis angustifolia.

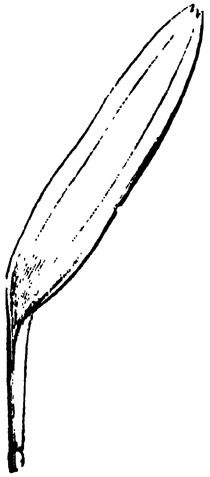

Fig. 64. Sterile semi-floret.

Fig. 65. Fertile floret ($\frac{4}{1}$).

The style, surmounting an epigynous disk, terminates in two small lobes, often dentiform, obtuse, below which it generally presents a sudden cylindrical enlargement. The fruit is glabrous or villose. They are African plants, especially from the Cape, tomentose, with pedunculate or nearly sessile capitules, as in *Landtia*, which we refer to this genus, or *Cymbonotus*, which is exceptionally Australian. *Cryptostemma*, which we also make a section of the genus *Arctotis*, is represented by a species introduced into Portugal and New Holland. *Arctotheca*, *Venidium*, and *Haplocarpha*, of African origin, equally, in our view, belong to *Arctotis*. The last have not receptacular paleoles; while in *Ursinia*, plants from the Cape and Abyssinia, which have been placed near, there are scales on the receptacle and the fruit is crowned with a range of flattened and imbricated hairs.

Gorteria differs chiefly from *Arctotis* in the involucre, the bracts of which are connate at the base; they are spinescent or more rarely foliaceous at the summit, as is also the case in those named *Gazania*. The achenes are inserted in shallow receptacular cavities and the leaves are unarmed, whilst in the neighbouring genera *Berkheya*, *Didelta* and *Cullumia*, all equally natives of South Africa, the leaves are rigid or spinous, and the cavities of the receptacle, thin-coated, dentate or slashed at the margin, most frequently deep enough to completely enclose the fruit.

Platycarpha, Cape plants, exceptional by their compound homogamous capitules (as *Gundelia* among the *Carduceæ*, near which they have been placed), are perennial, subacaulous, with inflorescences nearly sessile, the foliage and other characters being those of certain forms of *Arctotis*. They consequently link this series with the *Carduceæ;* they have also been compared with the *Vernonieæ*, of which they have nearly the style; but in whatever series they are placed, they constitute an abnormal type.

VII. THE SUNFLOWER SERIES.

The Sunflowers[1] (fig. 66–70), type of a tribe (*Helianthea*) of this family, have capitules with a flat or slightly convex receptacle.

Helianthus tuberosus.

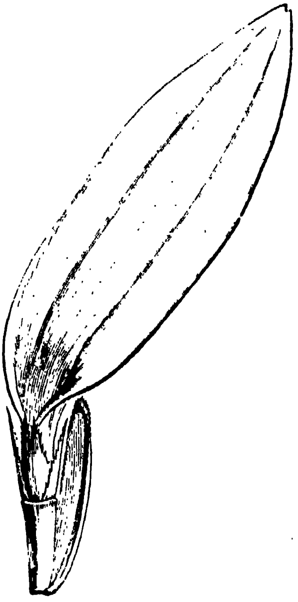

Fig. 67. Semi-floret.

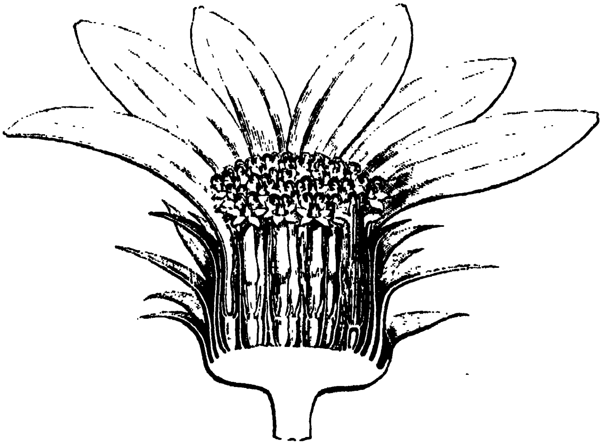

Fig. 66. Long. sect. of capitule.

The exterior bracts, forming the involucre, are large, foliaceous, imbricated, arranged in two or more series; and the interior, much smaller, thin, more or less scarious, translucent, have a flower in each axil. The flowers of the ray are irregular,[2] ligulate, sterile; those of the disk are regular, hermaphrodite and fertile.[3] The latter have a valvate corolla; five stamens, the anthers of which are entire or slightly bilobed at the base;[4] a uniovulate ovary, surmounted by two or three[1] sepal-like membranous, pointed or acuminate, flat, scarious blades; a style the two recurved papilliferous branches of which are prolonged upwards in a pointed and equally papillose appendage.[2] The semi-floret has a style with two more slender, smooth and recurved branches. The fruit (fig. 69, 70) is a compressed or slightly angular achene, the caducous pappus of which is formed of two hairs more or less rigid or dilated at the base, or of a somewhat larger number. *Helianthus* comprises herbaceous plants, often large, annual or perennial, scabrous or tomentose, inhabiting N. America, Chili, Peru and neighbouring countries. The leaves are opposite or alternate,[3] entire or dentate, often triple-nerved. The capitules, often of large size, are stipitate, solitary or united in loose, most frequently terminal cymes.[4]

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[1] *Helianthus* L. *Gen.* n. 979 (part.).—Cass. *Dict. sc. nat.* xx. 351; lix. 140.—DC. *Prodr.* v. 585.—Spach, *Suit. à Buffon*, x. 142.—Endl. *Gen.* n. 2538.—Payer, *Fam. nat.* 26.—B. H. *Gen.* ii. 376, n. 400.—*Harpalium* Cass. *Bull. Soc. philom.* (1818); *Dict.* xx. 299.—*Flourensia* DC. *loc. cit.* 592 (part.).—*Diomedea* Bert.—Coll. *Mem. Accad. torin.* xxxviii. 35, t. 31.—*Linsecomia* Buckl. *Proc. Amer. Acad. Philad.* (1861), 451.—*Corona solis* T. *Inst.* 489, t. 279.—*Chrysis* Ren. *Specim. Hist. pl.* 84, t. 83 (ex Endl.).—*Vosacan* Adans., *Fam. des pl.* ii. 130.—*Disconela* Rafin. *Nov. gen.* (1825), 3 (incl.: *Tithonia* Desf. *Viguiera* H. B. K. *Wyethia* Nutt.).

[2] They may be absent in some species (*H. Radula*, &c.).

[3] "Capitules heterogamous."

[4] The pollen is generally similar to that of the Vernonieæ and Astereæ.

Helianthus tuberosus.

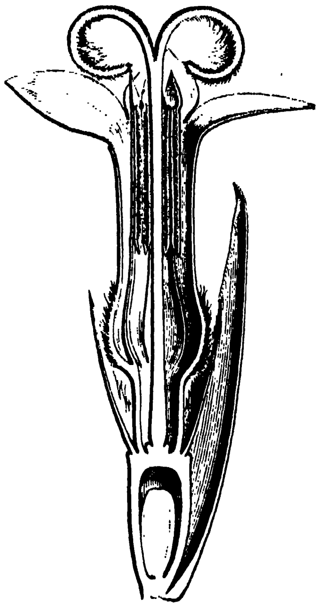

Fig. 68. Long. sect. of floret (☿).

Helianthus tubæformis, *excelsus* and other analogous species have constituted the genus *Tithonia*,[5] because their pappi are formed of persistent or caducous hairs, accompanied by persistent squamules; the leaves are alternate, and the foliaceous bracts of the involucre are rigid and striated at the base. *H. dentatus* and half a hundred others have been separated under the generic name of *Viguiera*,[6] because, besides having the pappus of the preceding, the exterior bracts of the involucre are dry in their lower portion, or herbaceous, the upper leaves are often alternate, the lower being opposite, and the capitules not voluminous, nearly equal to their peduncles. *H. Hookerianus* has become the type of a genus *Wyethia*,[1] because the ligulate flowers are fertile, all the parts of the pappus are persistent, and the capitules, of large size, are solitary at the summit of the axis, while the leaves are collected at the base of the plant. Including these diverse sections, the genus *Helianthus* contains about a hundred species,[2] a large number of which are cultivated in our gardens.

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[1] To which not unfrequently others are added, smaller and unequal.

[2] Generally in these plants, the bands called stigmatic are salient and are prolonged without rejoining as far as the pencil which crowns the summit of the stylary branches.

[3] And that often in the same plant, which may have the lower leaves opposite and the upper alternate.

[4] The flowers of the capitule are homochromous, all yellow, or those of the disk may be more or less tinted with purple or brownish violet at the summit.

[5] DESF. *Ann. Mus.* i. 49, t. 4.—DC. *Prodr.* v. 584.—ENDL. *Gen.* n. 2537.—B. H. *Gen.* ii. 374, n. 398.

[6] H. B. K. *Nov. gen. et spec.* iv. 224, t. 379.—DC. *Prodr.* v. 578.—ENDL. *Gen.* n. 2534.—*Harpalium* DC. *loc. cit.* 583 (part.).—ENDL. *Gen.* n. 2536.—*Leighia* CASS. *Dict.* xxv. 435.—DC. *loc. cit.* 580.—ENDL. *Gen.* n. 2535.—? *Bahiopsis* KELL. *Proc. Calif. Acad. nat. Soc.* ii. 35.

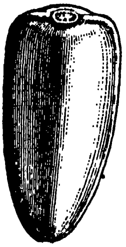
Fig. 69. Fruit ($\frac{3}{1}$).

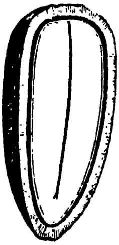
Fig. 70. Long. sect. of fruit.

Beside it are placed the following very analogous genera: *Dimerostemma*, *Melanthera*, *Perymenium*, *Garcilassa*, *Chænocephalus*, *Verbesina*, (?) *Podachænium*, *Spilanthes* (fig. 71, 72), (?) *Hymenostephium*, *Otopappus*, *Salmea*, *Epallage*, *Eleutheranthera*, *Lorentzia*, *Axiniphyllum*, *Abasaloa*, *Eclipta*, *Stemmatella*, *Siegesbeckia*, *Micractis*, *Zaluzania*, *Sabazia*, *Varilla*,

Spilanthus oleracea.

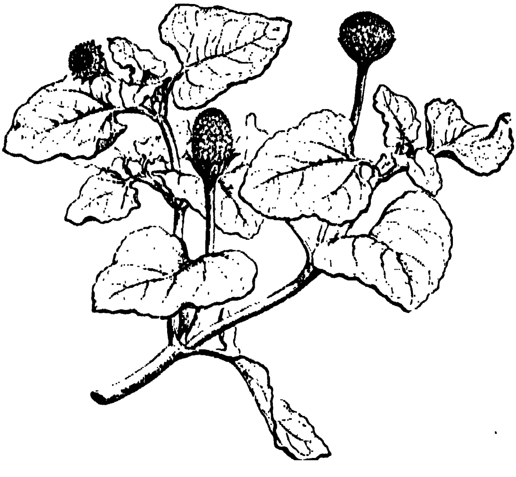
Fig. 71. Habit.

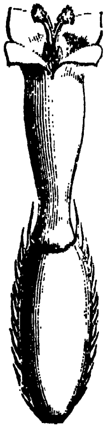
Fig. 72. Floret ($\frac{8}{1}$).

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[1] NUTT. *Journ. Acad. Philad.* vii. 39. t. 5.—B. H. *Gen.* ii. 374, n. 397.—*Alarconia* DC. *Prodr.* v. 537.—ENDL. *Gen.* n. 2495.—? *Melarhiza* KELL. *op. cit.* i. (ed. 2), 37.

[2] JACQ. *Hort. schœnbr.* t. 375; *Hort. vindob.* t. 160, 161, 375.—CAV. *Icon.* t. 218-220.—W. *Hort. berol.* t. 70.—H. B. K. *Nov. gen. et spec.* t. 375-378.—TORR. and GR. *Fl. N.-Amer.* ii. 318.—SWEET, *Brit. fl. Gard.* ser. 2, t. 75.—FIELD, *Sert. plant.* t. 54 (*Leighia*).—A. GRAY,

Enhydra, *Aphanactis*, *Selloa*, *Rumfordia*, *Monactis*, *Jægeria*, *Montanoa*, *Sclerocarpus*, *Wullfia*, *Tetragonotheca*, *Scalesia*, *Isocarpha* and *Rudbeckia*.

Zinnia is the type of a small subseries (*Zinnieæ*) comprising American plants, with capitules formed of hermaphrodite central flowers, fertile or, rarely sterile, and ligulate peripheric flowers with a sessile corolla, more or less rigid, sometimes contracted at the base in a short tube, persistent at the summit of the ripe

Bidens (*Dahlia*) *coccinea.*

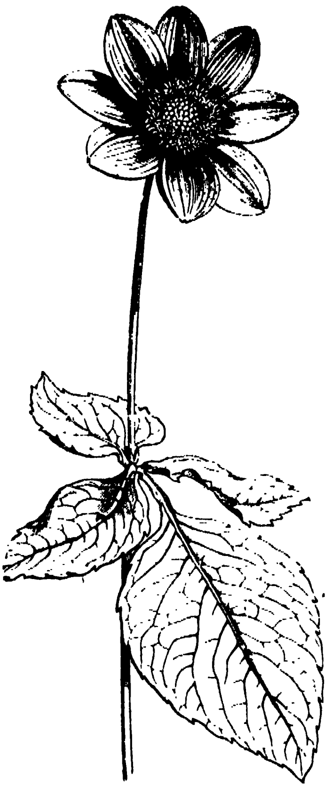

Fig. 73. Floriferous branch, with radial capitule.

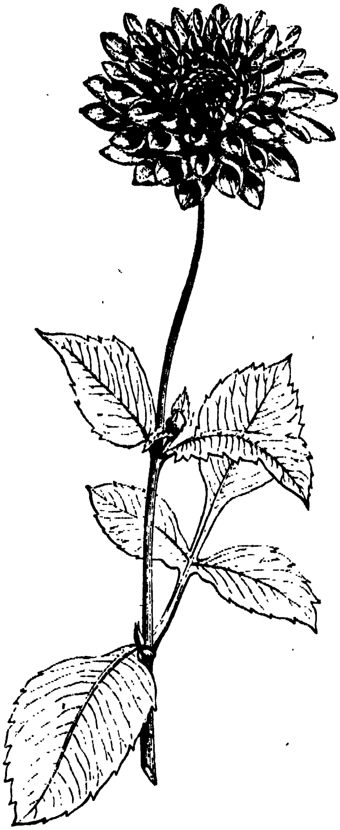

Fig. 74. Inflorescence called double, with all ligulate corollas.

(*Viguiera*); vi. 543 (*Wyethia*), 544; vii. 537; viii. 654 (*Wyethia*); *Emor. Exped. Bot.* 89 (*Viguiera*), 90.—Remy, *in C. Gay Fl. chil.* iv. 284, 287 (*Flourensia*).—Chapm. *Fl. S. Unit. St.* 228.—Schau. *Linnæa*, xix. 728.—Reichb. *Icon. Fl. germ.* t. 940.—*Bot. Reg.* t. 508, 524, 591, 1265, 1519.—*Bot. Mag.* t. 227, 2020, 2051, 2668, 2778, 3295, 3510, 3869.—Walp. *Rep.* ii. 608, 977 (*Wyethia*), 615 (*Leighia*), 616 (*Harpalium*), 617; vi. 164 (*Viguiera*), 165; *Ann.* i. 413 (*Wyethia*), 414; ii. 860 (*Viguiera*), 865; v. 223 (

fruit which is fertile. The receptacle bears, between the flowers, axillate scales or paleoles, and the leaves are almost constantly opposite. With the genus *Zinnia* are ranged *Sanvitalia*, *Philactis* and *Heliopsis*.

Bidens (Dahlia) coccinea.

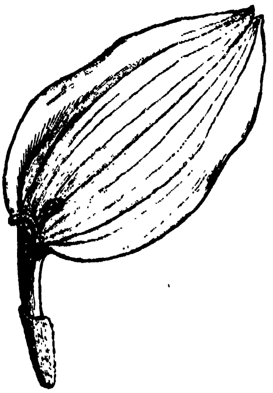

Fig. 75. Semi-floret (?).

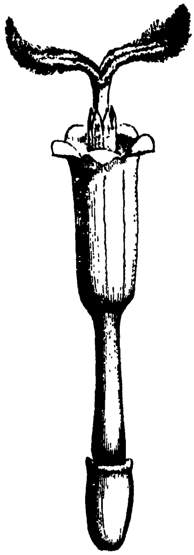

Fig. 76. Floret.

Bidens (with which we unite as subgenera *Cosmos* [fig. 77], *Dahlia* [fig. 73–76], *Coreopsis*, *Thelesperma*, &c.) belongs also to a small distinct group (*Bidenteæ*) characterized by homogamous or heterogamous capitules in which the radial flowers are either fertile or sterile (the ovary, in the latter case, being without a style), the discal hermaphrodite and fertile (except sometimes the central, which may remain sterile) with a receptacle charged with paleoles or scales, flat or slightly concave. The fruit is often compressed and bare at the summit, or oftener furnished with a couple or more salient points, bare or rigid and barbelate. Beside *Bidens* are placed the ten genera: *Coreocarpus*, (?) *Hidalgoa*, *Glossocardia*, *Heterospermum*, *Narvalina*, *Chrysanthellum*, *Isostigma*, *Guizotia*, *Trichospira* and *Synedrella*.

Bidens (Cosmos) bipinnata.

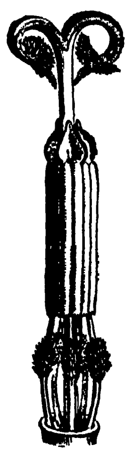

Fig. 77. Andrœcium and style.

Calea also gives name to a small subseries (*Caleeæ*) in which the capitules are sometimes homogamous, sometimes heterogamous, and the hermaphrodite flowers of the disk fertile, while those of the ray, when present, are female or neuter. The receptacle is also charged with paleoles; but the fruit, rarely bare at the summit, is oftener crowned with a pappus formed of an indefinite number of aristate, scarious, obtuse, pectinate or plumose hairs. This group (otherwise quite artificial) comprises, with *Calea*, the four genera *Tridax*, *Balduina*, *Gallinsoga* and *Dubautia*.

Melampodium divaricatum.

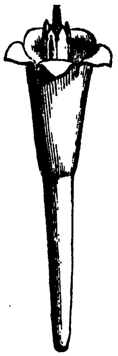

Fig. 78. Male floret.

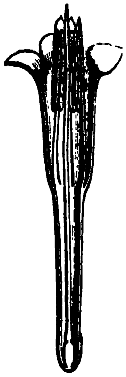

Fig. 79. Long. sect. of male floret.

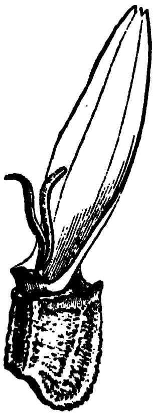

Fig. 80. Female semi-floret, with bract.

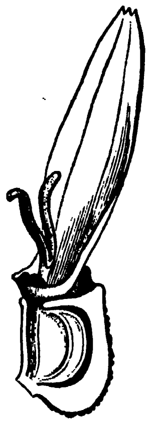

Fig. 81. Long. sect. of female semi-floret.

In *Madia*, centre of an American group (*Madieæ*), to which is added *Wilkesia* and *Argyroxiphium*, genera from the Sandwich Islands, the bracts of the involucre are uniseriate, or even wanting, as may be expected when the ligulate flowers of the

Parthenium integrifolium.

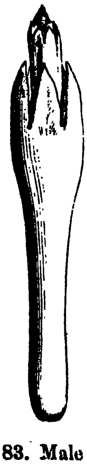

Fig. 83. Male flower.

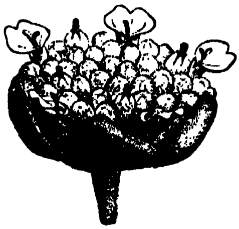

Fig. 82. Capitule ($\frac{3}{1}$).

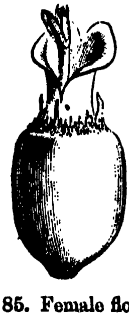

Fig. 85. Female flower.

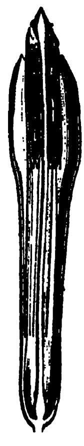

Fig. 84. Long. sect. of male flower.

circumference are absent. On the receptacle is found a single or double series of bracts, free or connate, which would be interior to the involucre and represent it in the types in which it is itself wanting.

Melampodium (fig. 78–81) is distinguished from the preceding genera by the peripheric flowers being female and fertile, while the florets of the centre are male or hermaphrodite, but sterile and furnished with a simple style which may even be the only existing portion of the gynœcium. Next to it are placed the six American genera *Guardiola*, *Baltimora*, *Parthenium* (fig. 82–85), *Espeletzia*, *Silphium* and *Ichthyothere*. The axillate bracts of the flowers, bracts bare, rugose, or muricate, may be slightly concave, but most frequently they completely enclose the ovary in their concavity.

Lagascea, natives of tropical America but introduced into the old world, have, with the floral organization of the preceding types, capitules reduced to a single flower, and collected in a gamophyllous 5-fid and calyciform involucre. The number of flowers may also be much reduced in *Milleria*, which has given name to a neighbouring group (*Millerieæ*). There are only one or two, female and fertile, in the ray, and from three to six florets in the disk; the latter are sterile. The neighbouring *Tetranthus* has generally, as its name indicates, only four flowers: two hermaphrodite and two female. Some forms of *Clibadium* (*Riencourtia*, *Lantanopsis*) and *Stachycephalum*, have only one female flower, with one or more hermaphrodite in the same capitule. To this group are also referred *Pinillosia* (fig. 86), *Heptanthus*, *Elvira*, American genera like the preceding; the Chinese *Sheareria*, and *Adenocaulon*, found both in Asia and America.

Pinillosia tetranthoides.

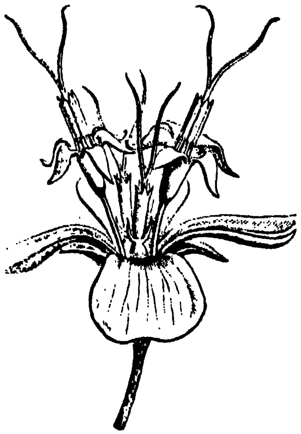

Fig. 86. Inflorescence ($\frac{5}{1}$).

These are also diminished forms compared with those represented by the genera *Podanthus*, *Astemma* and *Laxmannia*, natives, the first two of the Andes, the third of the Island of

St. Helena. Their flowers are diœcious, all regular, united in small capitules, the receptacle of which, flat or convex, bears axillate floral paleoles. They are trees or shrubs with leaves nearly always opposite and capitules generally in terminal clusters.

Helenium autumnale.

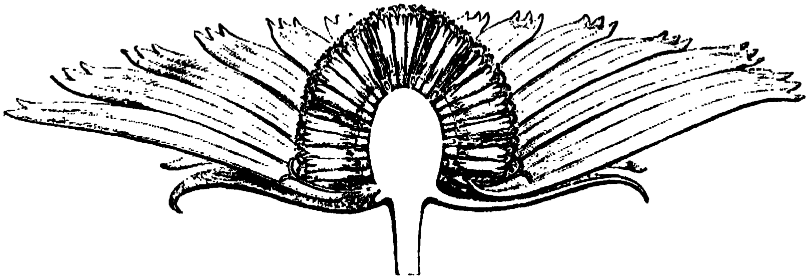

Fig. 87. Long. sect. of capitule ($\frac{3}{1}$).

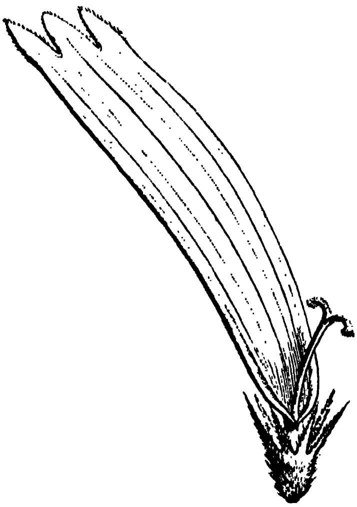

Fig. 88. Semi-floret.

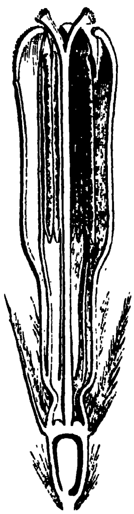

Fig. 89. Long. sect. of floret.

Helenium (fig. 87–89), which has given name to a tribe,[1] has capitules with a convex, ovoid or more elongate, bare receptacle, and two kinds of flowers in the involucre, the exterior bracts of which are large, foliaceous and united at the base; the interior very variable in size and form, or even wanting. The flowers of the circumference are female, and their ligulate corolla is divided above into 3–5 lobes; those of the centre are hermaphrodite, and furnished with a regular valvate corolla and five syngenesious stamens with anthers prolonged downwards in two more or less developed auricles. All have a fertile ovary with one somewhat excentric ovule; a pappus formed of a few (5–8) membranous, uncoloured, imbricated, generally (but not always) acuminate blades, and a style with two branches. The latter are slender, and revolute in the irregular flowers; in those of the centre they are recurved, and terminated by a small truncate dilatation. *Helenium* consists of Central and North American herbs, with alternate leaves and capitules solitary or united in corymbiform cymes. Beside this genus are placed *Gaillardia* (90–93), the capitules of which are homogamous or heterogamous with a globular, hemispherical or ovoid receptacle, and *Hymenoxys* and *Psathyrotes*, genera in which it is more depressed or quite flat above.

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[1] *Heleniea.* That is, generally, Helianthea in which the receptacle is without pales; a differential character which, in our view, is not of sufficient importance to place the two groups in different series; we therefore make them only a sub-tribe.

Gaillardia aristata.

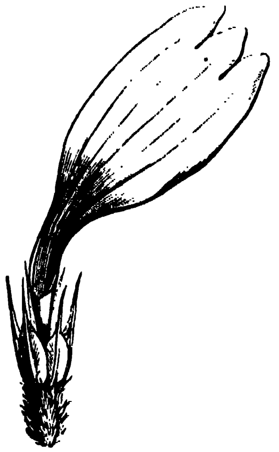
Fig. 91. Semi-floret.

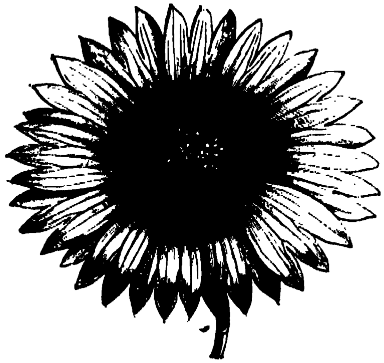
Fig. 90. Inflorescence.

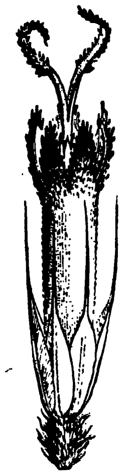
Fig. 92. Floret ($\frac{4}{1}$).

Gaillardia aristata.

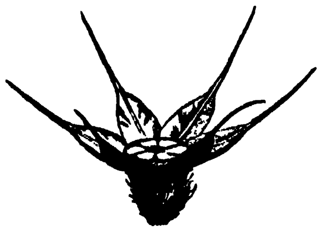
Fig. 93. Ovary surmounted by pappus.

In *Flaveria* (fig. 94, 95), type of a small group (*Flaverieæ*), the involucre is generally formed of only one series of bracts, and the fruit, instead of being elongate or turbinate and downy, as in the preceding genera, is furnished with 8–10 salient ribs like the ovary. Besides which, the stylary branches are truncate and penicillate. With *Flaveria* are ranged the genera *Sartwellia* and *Cadiscus*.

Flaveria (Broteroa) trinervata.

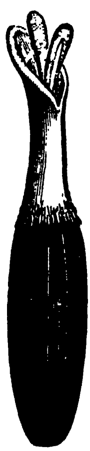

Fig. 94. Semi-floret ([illegible]).

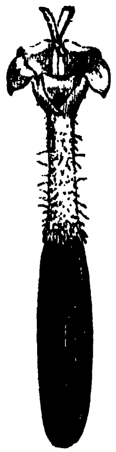

Fig. 95. Floret.

Schkuhria gives name to another subseries (*Schkuhrieæ*), in which, with the same structure of the involucre as in *Flaveria*, the fruit, generally elongate, has only four or five angles or ridges, and more rarely two angular margins. Nearly always the flowers of the ray, when present, are female. Here are likewise placed *Hymenopappus*, *Riddellia*, *Hulsea* (?), *Actinolepis*, *Lasthenia* (?), *Hecubæa*, *Burrielia*, *Oxypappus*, *Perityle*, *Palafoxia*, *Florestina*, *Rigiopappus* (?), *Galeana* (?), *Villanova*, *Blennosperma* (?), *Closia*, *Amauria*, *Amblyopappus*, *Thymopsis* (?) and *Microspermum*.

Tagetes (fig. 96) belongs to a neighbouring group (*Tageteæ*) in which the involucre, often gamophyllous and uniseriate, is pervaded, like many other parts of the plant, with reservoirs filled with an odorous oil. The fruit is elongate or wedge-shaped, and covered with numerous striæ. To this small group (which, by *Clappia*, connects the *Helenieæ* with the *Senecionideæ*) belong also *Chrysactinia*, *Syncephalanthus*, (?) *Schizotrichia*, *Pectis* and *Porophyllum*.

Tagetes patula.

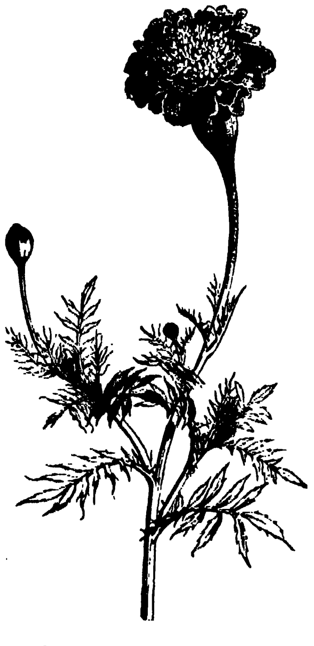

Fig. 96. Floriferous branch.

In *Jaumea*, which approaches the *Flavericæ*, the involucral bracts are arranged in two or many series, unequal, imbricate, and the fruit has ordinarily four or five angles. The capitules are often homogamous by suppression of the ligulate flowers. To the small group (*Jaumeeæ*) which has received its name are attached the American genera *Olivæa*, *Cacosmia*, *Geissocarpus*, and *Venegasia*; the last, by most of its characters, connects the *Helenicæ* to the *Anthemideæ*.

Senecio (fig. 97), which has given name to a tribe (*Senecionideæ*), forms, with us as with many others, only a subseries of the *Heliantheæ*; they have mostly flowers of two kinds: those of the ray are ligulate, female, but are often wanting as in the common groundsel; and those of the disk, regular, hermaphrodite, fertile, or rarely sterile. The receptacle of the inflorescence is flat or slightly convex, with shallow fossets sometimes fringed.

Senecio vulgaris.

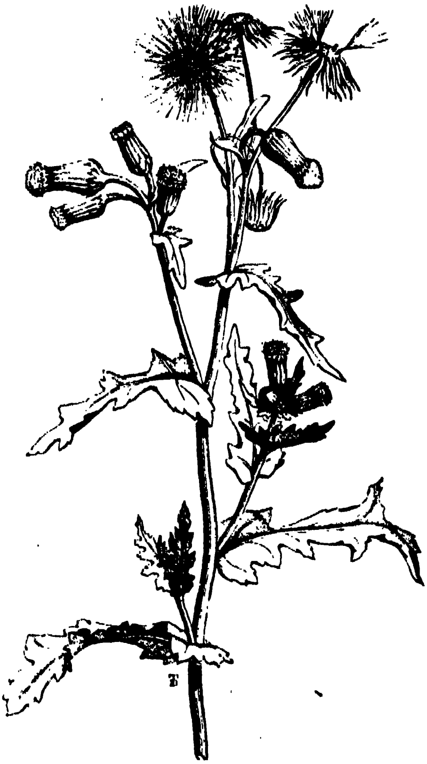

Fig. 97. Habit.

Doronicum (Arnica) montanum.

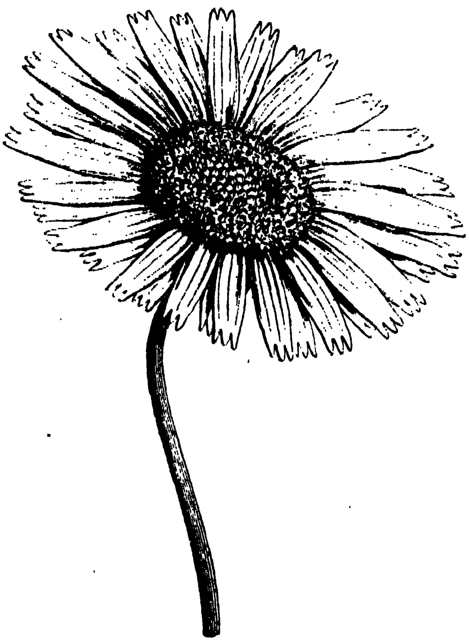

Fig. 98. Inflorescence.

The bracts of the involucre are of two kinds: the exterior short, free, often recurved at the summit; the interior much larger, erect, arranged in one or two series forming a sort of vertical tube, but in reality connected only by their thin margins, and slightly imbricated. All the fertile flowers have an erect ovule, an epigynous disk, a pappus of slender hairs, slightly united at the base, entire or somewhat barbelate, and a style with two branches. The regular flowers have a truncate stigmatiferous extremity, slightly dilated and finely penicillate, rarely with an appendage, and sooner or later they are recurved. In the irregular flowers it is less truncate, more rounded at the summit, and generally more slender and smoother. The anthers, often supported by a filament enlarged above, are apiculate, acuminate, or muticious above, and obtuse below, with prolongations, or with two short obtuse auricles. The fruit is an achene, nearly cylindrical or slightly compressed inwards, crowned with a pappus which is

Doronicum (Arnica) montanum.

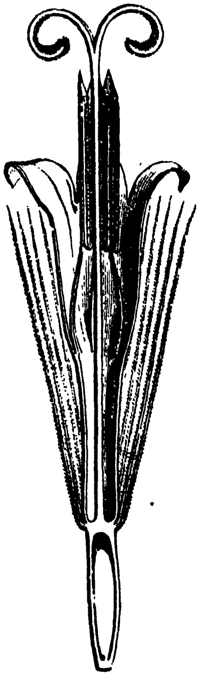

Fig. 99. Long. sect. of floret.

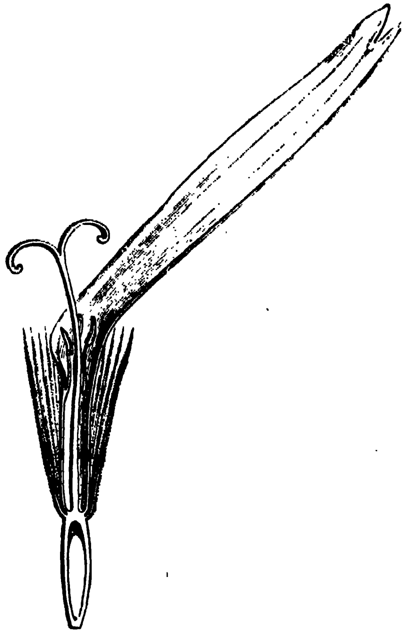

Fig. 100. Long. sect. of semi-floret.

sooner or later detached, traversed by a variable number of salient ribs, often covered with hairs. *Senecio*, common to all countries, is woody, herbaceous or fleshy, and its habit is extremely variable. This genus, with us, includes *Cacalia*, *Ligularia*, *Gynura*, *Cineraria*, *Erechthites*, *Stilpnophyllum*, *Notonia*, *Bedfordia*, *Gynoxis* and *Emilia*.

Petasites (*Tussilago*) *Farfara.*

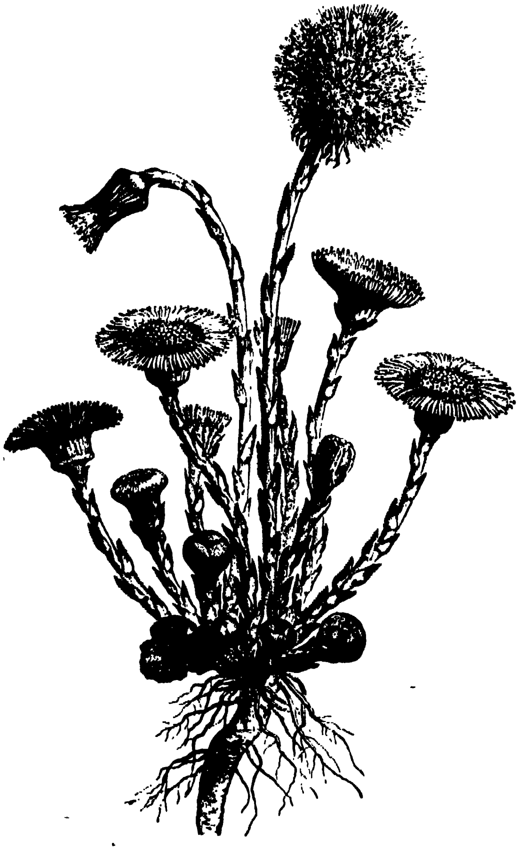

Fig. 101. Habit.

Next to *Senecio* come the, for the most part, very kindred genera (?) *Mesoneuris*, (?) *Culcitium*, *Haploestes*, *Crocidium*, *Metalema*, *Hertia*, *Raillardia*, *Robinsonia*, *Vendredia*, *Faujasia*, *Eriothrix*, *Tetradymia*, *Lopholæna* and *Doronicum* (fig. 98–100).

Othonna belongs to a group (*Othonneæ*) characterized by the union, to a variable extent, of the uniseriate folioles of the involucre, without smaller exterior bracts, and by truncate stylary branches, generally penicillate at the summit. The group also includes the five genera *Gymnodiscus*, *Euryops*, *Werneria*, *Oligothrix* and *Gamolepis;* the last also connects *Senecio* with the *Anthemideæ.*

Petasites officinalis.

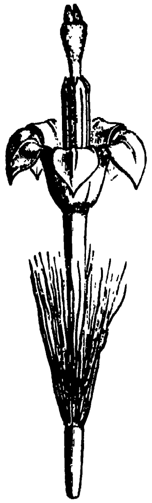

Fig. 103.
Floret ($\frac{8}{1}$).

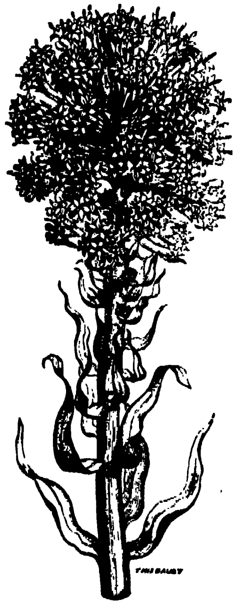

Fig. 102.
Inflorescence.

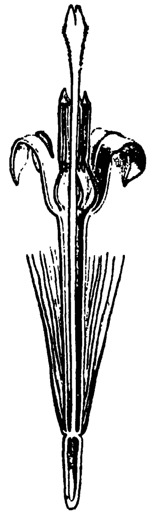

Fig. 104. Long. sect. of floret.

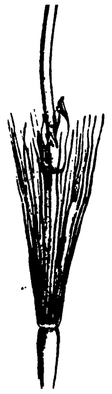

Fig. 105. Floret with little developed corolla and exserted style.

In *Liabum* the bracts of the involucre are disposed in several series, the shorter the more exterior; and the stylary branches of the hermaphrodite flowers are generally attenuated instead of truncate at the summit; a character which closely connects this small group (*Liabeæ*) to the *Vernonieæ.* To this group are also referred the genera *Neurolæna*, *Gongrothamnus*, (?) *Allendea*, and perhaps also *Clappia*, which forms a transition from the *Senecionideæ* to the *Helenieæ.*

In *Petasites* (fig. 101–105) and the genera with it forming the subseries (*Petasiteæ*) which connect the *Senecionideæ* to the *Eupatorieæ* and *Vernonieæ*, the bracts of the involucre are 1–2-seriate with some smaller exterior folioles, or more rarely pluriseriate; and the stylary branches are not truncated, but more or less attenuated and slightly obtuse at the extremity. The capitules are occasionally heterogamous or more generally homogamous, or even sometimes diœcious, often solitary, rarely numerous, at the top of a stem which comes up from the ground before the leaves appear. With *Tussilago* are placed *Luina* (the position of which is somewhat uncertain) and some genera with bi- or pluriseriate bracts, as *Alciope* and *Cremanthodium*, which have at the same time close affinities with the *Astereæ* and *Anthemideæ*.

Matricaria (Anthemis) nobilis.

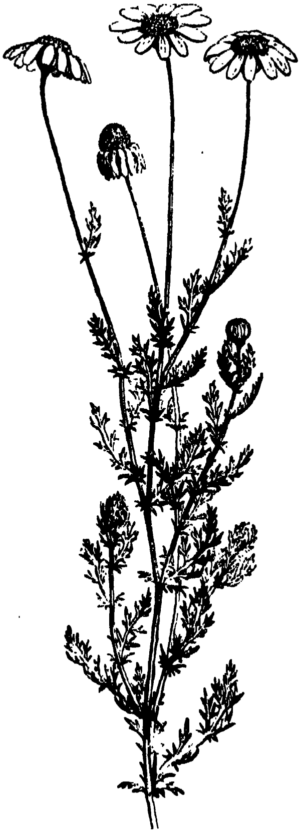

Fig. 106. Habit of wild plant.

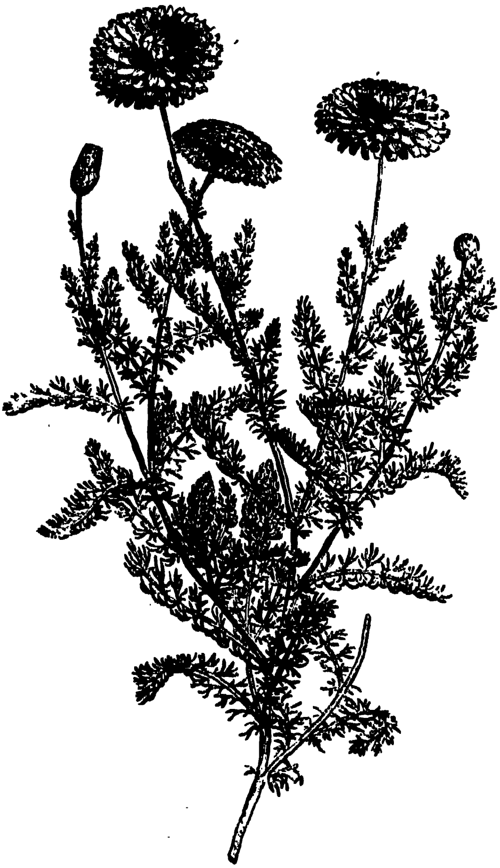

Fig. 107. Plant with so-called double capitules.

Matricaria and *Anthemis* have often been made the types of a distinct tribe (*Anthemideæ*), but we can consider them only the head of a subseries of the *Helianthææ*. Thus a plant like the

Camomile, often referred to the genus *Matricaria* (fig. 106, 107), has capitules with a convex receptacle, numerous bracts, green to a small extent, and transparent at their more or less divided margins. They follow the bracts of the involucre which is formed of pluriseriate folioles, imbricated, broader and slightly scarious at the margin. The flowers of the centre are regular, and those of the circumference have a ligulate corolla. All are destitute of a calyx and have a fertile uniovulate ovary, surmounted by a two-branched style. The compressed tube of the

Matricaria (Anacyclus) Pyrethrum.

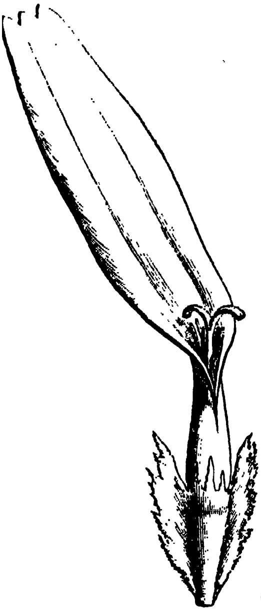

Fig. 109. Semi-floret.

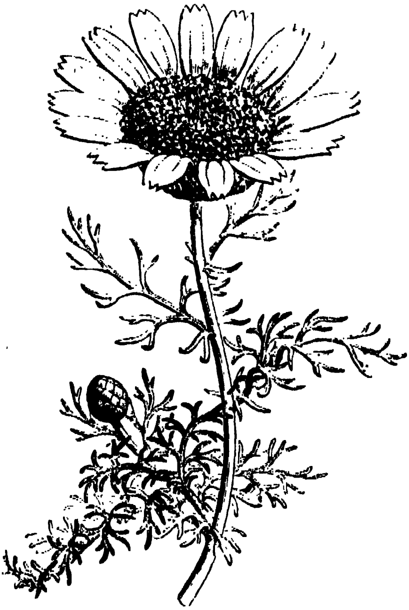

Fig. 108. Floriferous branch.

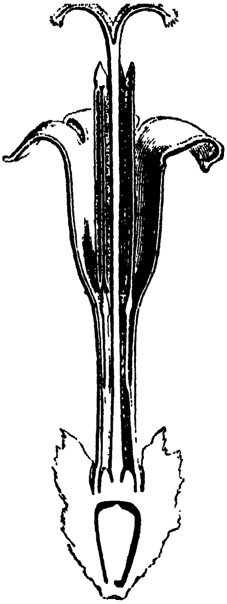

Fig. 110. Long. sect. of floret.

Santolina (Achillea) Millefolium.

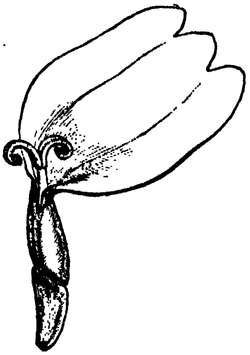

Fig. 111. Semi-floret (♀).

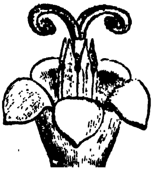

Fig. 112. Floret.

ligulate corolla is surmounted by an expanded limb (here white), with three teeth; and the regular (yellow) corollas have five valvate teeth to the limb which surmounts a tube slightly enlarged and surrounding five stamens with anthers syngenesious, obtuse and nearly entire at the base. The stylary branches are slender and revolute in the irregular flower; in the regular they are divergent, somewhat enlarged and truncate at the summit, bare or surmounted by a pappus of hairs or scales, generally short. The plants are herbs of the old world, often aromatic, with alternate more or less divided leaves and pedunculate capitules. To this genus we refer *Anthemis*, *Cladanthus*, *Anacyclus* (fig. 108–110) distinguished as sections only by characters of very small importance. Some fruits in the latter are furnished with short wings divided at the margin; *Cladanthus* has several dissected floral leaves, and the peduncles of the secondary capitules spring immediately from the primary capitules. *Lidbeckia*, *Eumorphia*, *Leucampyx*, *Mecomischus* and *Thamnophyllum* are also sections more or less abnormal, especially in the organs of vegetation.

Chrysanthemum Balsamita.

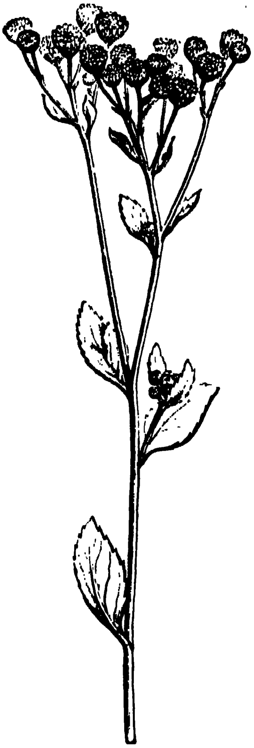

Fig. 113. Floriferous branch.

Chrysanthemum Tanacetum.

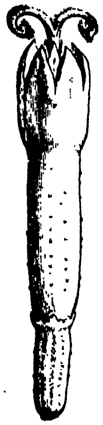

Fig. 114. Flower ($\frac{8}{1}$).

Beside *Anthemis*, this subseries comprises the three allied genera *Chrysanthemum* (fig. 113, 114) (including *Pyrethrum* and *Tanacetum*), *Cancrinia*, *Peyrousea*, *Œdera*, *Baileya* (the only native of N. America, most of the genera of this group belonging to the old continent), *Santolina* (fig. 111, 112) (including the *Achilleæ*), *Athanasia* (including the abnormal sections *Lasiospermum*, *Eriocephalus*, *Diotis* and *Pentzia*), (?) *Gymnopentzia*, *Lepidostephium*, *Phymaspermum*;

Soliva, in the female flowers of which the corolla is rudimentary or absent; *Ceratogyne*, a small Australian herb, the corolla of which is abnormal, with a flat or concave ligule in the female flowers, whilst the regular limb of the discal flowers is dilated and 3–4-dentate; *Cotula*, small herbs often creeping or cæspitose, abounding in the warm regions of both worlds, in the female flowers of which the corolla is short, conical, or nil, while that of the hermaphrodite flowers is tubular, 4-dentate, dilated or not at the base.

In this, as in many of the preceding types, the styles have two truncate or obtuse branches; in the sterile flowers, the style is oftener undivided. Lastly, *Artemisia* (fig. 115–117), in which are included *Absinthium* and *Crossostephium*, forms, by its small and reduced capitules, a transition between the *Astereæ* or the *Heliantheæ*, the most complete types, and the most diminished represented by *Ambrosia* and *Xanthium*. The receptacle of *Absinthium* is covered with hairs or narrow scales. *Crossostephium* is at the same time very analogous to *Tanacetum;* but it has a broadly campanulate involucre with bracts in two or three series. The female flowers are numerous, and the fruit has five longitudinal ridges.

Artemisia Dracunculus.

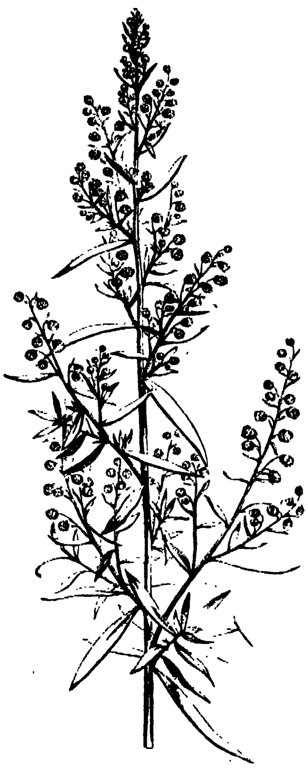

Fig. 115. Floriferous branch.

Artemisia Absinthium.

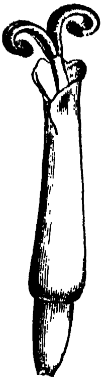

Fig. 117. Semi-floret ($\frac{10}{1}$).

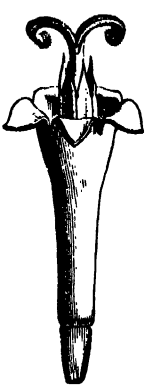

Fig. 116. Floret.

VIII. THE AMBROSIA SERIES.

The Ambrosias[1] (fig. 118–123) represent a very reduced type of the *Compositæ*, and have often been relegated to a separate family. The flowers are monœcious, and the males are disposed in capitules,[2] surrounded by a gamophyllous involucre in the form of a cup open above and divided at the margin in a variable number (4–12) of lobes. Inserted on a receptacle of small extent and nearly flat above, the flowers are monoperianthous, formed of a campanulate corolla, with a limb divided into five valvate lobes and a short tube, near the top of which are inserted five alternate

Ambrosia maritima.

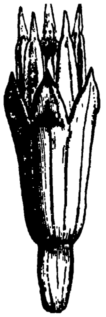

Fig. 119. Male flower.

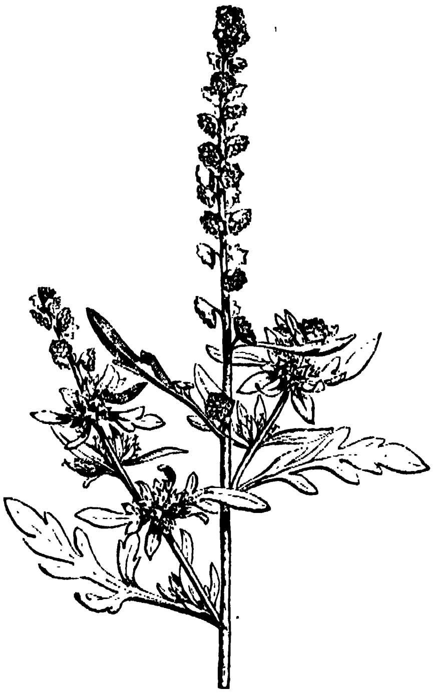

Fig. 118. Floriferous branch.

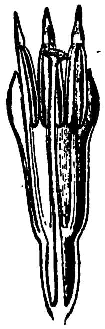

Fig. 120. Long. sect. of male flower.

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[1] *Ambrosia* T. *Inst.* 439, t. 252.—L. *Gen.* n. 1057.—J. *Gen.* 191.—Lamk. *Dict.* i. 127 ; Suppl. i. 322 ; *Ill.* t. 675.—Gærtn. *Fruct.* ii. 417, t. 164.—Cass. in *Dict. sc. nat.* xxv. 203.—Less. *Syn.* 219.—DC. *Prodr.* v. 525.—Endl. *Gen.* n. 2482.—Payer, *Organog.* 638, t. 129 ; *Fam. nat.* 29.—H. Bn. in *Dict. encycl. sc. méd.* iii. 552.—B. H. *Gen.* ii. 354, n. 347.

[2] " Capitula submascula."

stamens, each formed of a filament and a bilocular introrse anther dehiscing by two longitudinal clefts,[1] and surmounted by a triangular prolongation of the connective or by a short incurved apiculate hair.[2] From the centre of the flower arises a rudimentary gynœcium consisting of an erect style the summit of which is dilated into a depressed papillose head. The female flowers are solitary in a saclike involucre (fig. 121–3) dilated at mid height and there bearing a small number (4–8) of conical and aculeate protuberances, pretty regularly disposed in a single series. Above this, the involucre extends in a cone through the summit of which the stylary branches pass by a small opening with an entire or slightly dentate margin. Inserted at the bottom of this involucre, the one-celled ovary encloses a single ovule,[3] nearly basal, anatropous, with inferior micropyle,[4] and is surmounted by a style divided nearly from the base into two long branches exserted, divergent, subulate and papillose. The fruit is dry, hard, closely confined in the persistent, bristly involucre, and contains a single seed with fleshy oily exalbuminous embryo,

Ambrosia maritima.

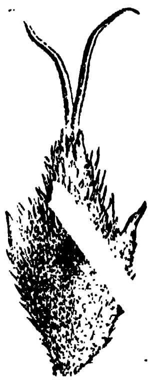

Fig. 121. Female flower.

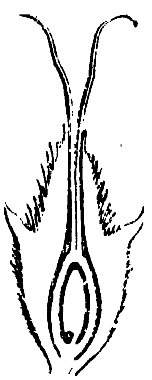

Fig. 122. Long. sect. of female flower.

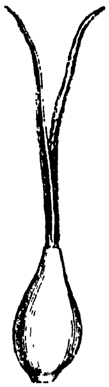

Fig. 123. Gynœcium.

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[1] The pollen, according to H. Mohl (*Ann. sc. nat.* sér. 2, iii. 315), "is spherical with three short folds; in water, spherical with three pores; short spines. *Ambrosia trifida*, *A. artemisiæfolia*, *Xanthium orientale* (not spinous)."

[2] The absence of this hair has been regarded as a sign of the perfection of the anther. (Mech. *Proc. Amer. Acad.* [1871]).

[3] Payer (*Organog.* 638) has seen in these young flowers a collarette which he says evidently represents the corolla.

[4] It has only an incomplete coat; its insertion is very slightly excentric.

with downward radicle. The Ambrosias are herbaceous, annual, perennial, or frutescent at the base, hairy and odorous, natives of America, whence we may count some ten species[1] independently of one or two others which inhabit the temperate and warm regions of both hemispheres, especially near the seashore. The leaves are opposite or alternate, entire, lobed, incised, bi- or tri-pinnatisected. The flowers, small and greenish, are inserted in the axils of the upper leaves or united higher up in clusters or in terminal spikes of capitules. This last applies to the males. The females inserted lower in the axils of the leaves form single-flowered capitules, collected in contracted cymes or glomerules. Each male flower is often accompanied by an axillate, linear, filiform bract.

Xanthium orientale.

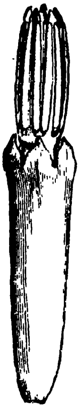

Fig. 125. Male flower.

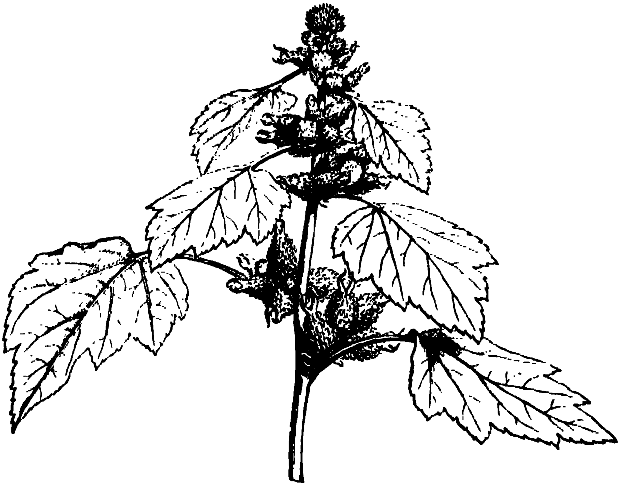

Fig. 124. Floriferous branch (½).

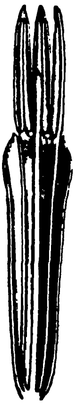

Fig. 126. Long. sect. of male flower.

Some forms of *Ambrosia* named *Franseria*,[2] have from one to four female flowers in the same involucre, which is armed externally with two or more series of straight or glochidate spines. Others, of which a genus *Hymenoclea*[3] has been made, American like the preceding, have a single flower in the involucre; but the exterior spines are represented by a crown formed of a variable number (8–12) of leaf-like blades.

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[1] W. *Hort. Berol.* t. 2 (*Franseria*).—REICHB. *Ic. Fl. germ.* t. 1577.—A. GRAY, *Proc. Amer. Acad.* vii. 355 (*Franseria*); *Emor. Exp. Bot.* 87.—TORR. *Pl. Fremont. Smithson. Contrib.* vi. t. 8 (*Hymenoclea*).—REMY, *C. Gay Fl. chil.* iv. 303 (*Franseria*), 305.—CHAPM. *Fl. S. Unit. St.* 223.—BOISS. *Fl. or.* iii. 252.—GRISEB. *Fl. brit. W.-Ind.* 369.—WILLK. et LGE, *Prodr. Fl. hisp.* ii. 274.—GREN. et GODR. *Fl. de Fr.* ii. 395.—WALP. *Rep.* ii. 606, 696; vi. 153 (*Franseria*), 154; *Ann.* ii. 850 (*Franseria*), 851 (*Hymenoclea*); v. 214 (*Franseria*).

[2] CAV. *Icon.* ii. 78, t. 200.—DC. *Prodr.* v. 524.—ENDL. *Gen.* n. 2481.—B. H. *Gen.* ii. 354, n. 348.—*Hemiambrosia* DELP. *Stud. s. Artem.* 57.—*Hemixanthidium* DELP. *loc. cit.* 60.—*Xanthidium* DELP. *loc. cit.* 62.

[3] TORR. GRAY, *Pl. Fendler.* 79.—B. H. *Gen.* ii. 344, n. 346.

Xanthium (fig. 124–131), found in the temperate and warm regions of both worlds, has the male flowers of *Ambrosia*, surrounded by an involucre of three folioles, like the female involucres, armed externally with straight or hooked spines, each enclosing two flowers, the styles of which extend above the involucre. In *Iva*, American plants, which has been divided into several genera, the flowers of both sexes are fundamentally the same in construction as in *Ambrosia* and *Xanthium*, but they are united in the same involucre: the males in the centre, the females at the circumference; the latter are either furnished with a small tubular corolla, or are oftener apetalous. The capitules are generally united in ramified or compound inflorescences, and these plants, in our opinion, approach very near those of *Artemisia*, which have a similar inflorescence.

Xanthium orientale.

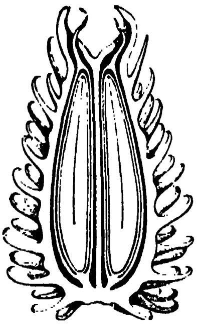

Fig. 131. Long. sect. of fructiferous involucre.

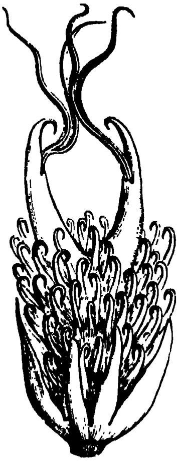

Fig. 127. Two-flowered female involucre, with its bracts.

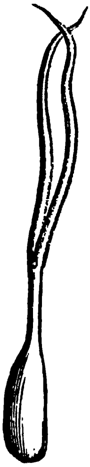

Fig. 129. Female flower.

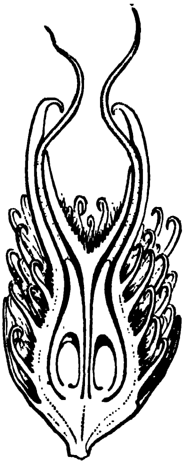

Fig. 128. Long. sect. of two-flowered female involucre.

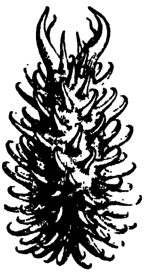

Fig. 130. Fructiferous involucre.

The *Compositæ*,[1] the most numerous and the most natural family of the vegetable kingdom, had been instinctively conceived by the older botanists. TOURNEFORT formed three classes of his *Institutiones*[2] of herbaceous and suffrutescent plants which were distinguished as *flore flosculoso*, *semi-flosculoso* and *radiato*," regarding, as is well-known, like his predecessors and contemporaries, the capitule as a flower. DODOENS,[3] a century and a half earlier, had distinguished a Class of Thistles, and ZALUZIAN,[4] as early as 1592, admitted a Class of *Compositæ*.[5] With LINNÆUS, these plants constituted the greater part of the Syngenesiæ, and in his *Fragmenta Methodi naturalis*, he admits an order of *Compositi*. B. DE JUSSIEU,[6] in 1759, enumerated three Orders of *Cichoraceæ*, *Cinarocephalæ* and *Corymbiferæ*; whilst ADANSON,[7] united all the *Compositæ* into one and the same family, and divided it into the ten sections, Lettuces, Globe thistles, Thistles, Immortals, Ambrosias, Tansies, Fleabanes, Ragworts, Marigolds, and Bidens. A. L. DE JUSSIEU[8] returned to the three Orders of his uncle, in which he unfortunately included *Nephelium* and, later, the *Calycereæ*. He expressed the wish that a careful monograph might lead to an attentive study of these plants. It was for many years the desired object of A. H. G. DE CASSINI.[9] Towards the close of 1836, A. P. de Candolle published in the *Prodromus*[10] a monograph of the *Compositæ* on which he had also written a special memoir. He profited by the labours of Lessing,[11] especially his *Synopsis*,[12] which date from 1832. ENDLICHER,[13] coordinating the results arrived at by his predecessors, enumerated in this family 836 genera. In 1857, PAYER,[14] studying the floral organogeny of this family, dispelled most of the erroneous theories held respecting the floral organization of the *Compositæ*.[15] Recently Messrs. Bentham and Hooker[1] revised the family for their *Genera*, and included in it nearly 800 genera, which they divided into thirteen tribes: *Vernoniaceæ*, *Eupatoriaceæ*, *Asteroïdeæ*, *Inuloïdeæ*, *Helianthoïdeæ*, *Helenioïdeæ*, *Anthemideæ*, *Senecionideæ*, *Calendulaceæ*, *Arctotideæ*, *Cynaroïdeæ*, *Mutisiaceæ*, *Chicoraceæ*. With us, the number of tribes or series is reduced to eight, comprising 403 genera,[2] many, however, being divided into sub-series, according to the following plan:

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[1] *Compositæ* VAILL. *Act. Acad. par.* (1718–1721).—L. *Ord. nat.* 21.—*Synanthereæ* L.-C. RICH. *Marth. Cat. hort.* (1801), 85.

[2] 74, 438–500, Cl. 12 (1700).

[3] *Pempt.* (1552).

[4] *Method. herb. libri* 3.

[5] From which, it is true, he excluded the Lactueæ Cardui and Scabiosæ.

[6] *A.-L. Juss. Gen.* lxiv.

[7] *Fam. des pl.* ii. (1763), 103, Fam. 16.

[8] *Gen.* (1789), 168, Ord. 1–3.

[9] *Dict. sc. nat.* li. 443; *Opusc. phytol.* i. 1 (1826). Vol. iii. (1834) contains a *Résumé de la Synéranthologie.*

[10] V. 4, Ord. 102 (1836); vi. (1837); vii. (1838), 1–308.

[11] De generibus *Cynarocephalarum* atque de spec. generis *Arctotidis*.

[12] "Syn. gen. *Compositarum* earumque dispositionis nov. Tentamen, monogr. multarum capens. interjectis" (Berlin).

[13] *Gen.* 355, Ord. 120.

[14] *Organog. comp.* 636, t. 133; *Fam. nat.* 18.

[15] On the history of this family and its divisions into tribes, see especially DC. *Mém.* ix. In 1819 (on the organization, &c., of these plants, R. BROWN had published his very celebrated memoir: *Observations on the natural*

I. Carduеæ.[3]—Capitules homogamous, with similar or slightly dissimilar flowers. Corollas complete or tubular, regular (florets), or much more generally slightly irregular, 5-fid. Receptacle thick, often subfleshy, alveolate or oftener hairy, fimbriate or paleaceous. Bracts of involucre numerous, pluri- or multiseriate, at the summit scarious, or spinous, or surmounted by a foliaceous appendage, generally closely imbricated. Anthers with cells prolonged below in a tail. Style at top entire or with two short branches, erect or somewhat divergent; often dilated or hairy externally below its papillose portion. Fruit ordinarily hard, basi- or obliquely fixed; pappus simple or pluriseriate, formed of linear or flattened hairs, more rarely absent.—Herbs with alternate, often spinescent leaves.—16 genera.

II. Mutisieæ.[4]—Capitules homogamous or heterogamous, flowers all similar, corolla with bilabiate limb; or dissimilar, the exterior (radial) irregular and the interior (discal) subregular or

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amily of plants called Compositæ (*Trans. Linn. Soc.* xii. 76-142; *Misc. Works* (ed. Benn.), ii. 259) Lindley gave to these plants the name *Asteraceæ* (*Veg. Kingd.* 702, Ord. 273); and K.-H. Schultz (called *bipontinus*), who devoted himself specially to a study of those plants, and published several memoirs upon them from 1841 to 1866, named them *Cassiniaceæ* (*Flora* [1852], 129). Mr. Masters recently set himself to explain their floral organization (*Journ. Bot.* [1878], 33). Mr. J. Decaisne has advanced the most absurd explanations of the capitules of these plants (*Dict. d'Orb.* iv.).

[1] *Gen.* ii. 163, 1230, Ord. 88 (1873).

[2] Without speaking of the quite doubtful genera such as: *Dadia* Vell. (*Fl. flum.* viii. t. 86), *Sabbata* Vell. (*loc. cit.* t. 94), *Gomezia* Llav. (*Reg. Trim. Mex.* (1832), 41, ex DC. *Prodr.* vii. 262). W believe, indeed, that with a deeper study of all the types, this reduction may be pushed farther, the characters on which many authors have inconsiderately founded generic divisions being often without value or even imaginary.

[3] *Cynarocephalæ* J. *loc. cit.*—*Cynareæ* Less. *Syn.* 4.—DC. *Prodr.* vi. 449, Trib. 5 (part.).—*Carduineæ* Cass.—*Carlineæ* Cass.—*Centaurieæ* Cass.—*Echinopsideæ* Cass.—*Arthrostyleæ* Dumort. *Fl. belg. Prodr.* 72.

[4] Cass. *Dict.* viii. (1817), 395.—Less. *Linnæa* (1830), 237.—*Mutisiaceæ* Less. *Syn.* 92.—DC. *Prodr.* vii. 1, Trib. 6.—Endl. *Gen.* 480.—B. H. *Gen.* ii. 484, Trib. 12.—*Labiatiflora* DC. *Act. Acad. sc.* (1808); *Ann. Mus.* xix. 59.—*Chænanthophoræ* Lag. *Amœn.* ii. (1811), 29.—*Perdicieæ* Spreng. *Syst.* iii. 358, 501.—*Gerbereæ* DC. ex Endl. *Gen.* 481.—*Lerieæ* Less. *Syn.* 120.—*Facelideæ* Less. *Syn.* 123.—*Nassauvieæ* Cass. *Dict.* viii. 395; *Op. phyt.* ii. 151.—*Nassauviaceæ* Less. *Syn.* 396.—DC. *Prodr.* vii. 48, Trib. 7.—*Trixideæ* Less. *Syn.* 400.

less irregular. Corolla 5-fid. Receptacle bare or rarely paleaceous. Bracts of involucre ∞-seriate, imbricate, unarmed or more rarely spinescent. Anthers with cells generally prolonged downwards in a tail. Style with branches of variable length, often short, obtuse, rounded or truncate at the summit, not appendiculate. Fruit surmounted by a variable pappus, formed of linear or paleaceous hairs, or wanting. Herbaceous or woody plants, not unfrequently climbing, with alternate, rarely opposite leaves.—37 genera.

III. Cichorieæ.[1]—Capitules homogamous, with irregular flowers having the limb of the corolla complete, 5-merous, 5-dentate, but ligulate (deeply cut within and bent without). Receptacle bare or more rarely furnished with caducous hairs. Involucre formed of bracts 1-∞-seriate, free or united below; the exterior often free, reflexed, smaller.[2] Anther cells bare below, or with a short setiform prolongation. Style branches more or less elongated, generally slender. Fruit surmounted or not by a sessile, stipitate pappus of paleaceous, linear, entire, dentelate or plumose hairs.—Nearly all herbaceous[3] plants, with alternate leaves, and organs generally gorged with lac.—19 genera.

IV. Vernonieæ.[4]—Capitules homogamous, with flowers all regular. Corolla[5] tubular. Anthers sagittate or appendiculate at the base (*Euvernonieæ*[6]), or subentire and not appendiculate (*Eupatorieæ*[7]). Style branches narrow or subulate, with salient papillæ (*Euvernonieæ*), or often more rounded and obtuse with shorter papillæ (*Eupatorieæ*). Fruit surmounted or not, by a pappus of hairs or paleoles.—Plants often odorous, herbaceous, more rarely woody, with alternate or opposite leaves.—37 genera.

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[1] *Cichoraceæ* Vaill. *Act. Acad. par.* (1721).—J. *Gen.* 168.—Endl. *Gen.* 93, Trib. 8.—*Lactuceæ* Adans. *F m. des pl.* ii. 111.—Cass. *Op. phyt.* iii. 14.—*Cichoreæ* Spreng.—*Ligulatæ* Gærtn.—*Glossariphytum* Neck.—*Cichoriaceæ* B. H. *Gen.* ii. 504, Trib. 13.—*Lampsaneæ* Less.—*Hyoserideæ* Less.—*Hypochæriдeæ* Less.—*Scolymeæ* Less.—*Hieraciеæ* Less.—*Rodigieæ* DC. *Prodr.* vii. 98.

[2] Often wrongly called calycule.

[3] *Fitchia*, *Dendroseris*, are arborescent; certain *Sonchus* are frutescent.

[4] Cass. *Tabl.* ii. 20; *Op. phyt.* i. 333.—*Vernoniaceæ* Less. *Syn.* 145.—DC. *Prodr.* v. 9, Trib. 1.—Endl. *Gen.* 356, Trib. 1.—B. H. *Gen.* ii. 223, Trib. 1.—*Tagetineæ-Pectideæ* Cass.—*Rolandreæ* Cass.—*Elephantopeæ* Cass.—*Bojerieæ* DC.—*Pectideæ* Less.—*Liabeæ* Cass.—*Albertinieæ* DC.—*Lychnophoreæ* B. H.

[5] Never yellow, it is said, in the Euvernonieæ, and of a yellowish white in the Eupatorieæ, but not a true yellow (B. H.).

[6] DC. *Prodr.* v. 10.—B. H. *Gen.* ii. 170, Ser. 3.

[7] Cass. *Tabl.* 19.—DC. *Prodr.* v. 103, Trib. 2.—*Eupatoriaceæ* Less. *Syn.* 154.—Endl. *Gen.* 365, Trib. 2.—B. H. *Gen.* ii. 165, Trib. 2.—*Adenostyleæ* Cass.—*Alomieæ* Less.—*Agerateæ* Less.—*Piqueriеæ* B. H.

V. Astereæ.[1]—Capitules heterogamous, radiate, with irregular, semiligulate radial flowers,[2] or none, and regular discal flowers (often yellow) not unfrequently present alone. Receptacle flat or more or less convex, rarely slightly concave in the centre. Involucre variable. Receptacle most frequently bare. Anthers obtuse at the base (*Euastereæ*), or prolonged in a hair or tail (*Inuleæ*). Style with narrow or more or less flattened branches, with appendage (*Euastereæ*) or without (*Inuleæ*), and in the sterile flowers not unfrequently undivided.—Generally herbaceous plants with alternate leaves.—115 genera.

VI. Calenduleæ.[3]—Capitules heterogamous, radiate, or rarely homogamous by the absence of the irregular radial flowers. Receptacle bare, alveolate or paleaceous. Involucral bracts 1–2-seriate (*Eucalenduleæ*), or ∞-seriate (*Arctoteæ*[4]), often dry, scarious or spinescent at the summit. Anthers obtuse and without prolongation (*Arctoteæ*), or prolonged in a point or short tail (*Eucalenduleæ*). Style with branches truncate at the summit, or obtuse, rounded (*Arctoteæ*), or in the sterile flowers undivided. Fruit often thick (rarely subfleshy), straight or curved without, pappus, or more rarely crowned with a woolly pile, or with a pappus of short or paleaceous hairs.—Plants ordinarily herbaceous with alternate leaves, often collected in a rosette at the base of the stem.—15 genera.

VII. Heliantheæ.[5]—Capitules heterogamous, radiate, or destitute of the semiligulate radial flowers. Involucre formed of 1–∞-seriate bracts, the interior sometimes larger and uniseriate, with or without smaller exterior bracts (*Senecioneæ*[6]), herbaceous or dry and scarious at the top (*Anthemideæ*[7]). Receptacle bare or more rarely paleaceous. Anthers without basal extensions (*Helenieæ*,[1] *Anthemideæ*), or sometimes shortly mucronate. Style with truncate branches (*Anthemideæ*), more rarely appendiculate and sometimes undivided in the sterile flowers. Fruit non-angular, or compressed (*Euheliantheæ*), or 3–4-angular (*Euheliantheæ*[2]), or 4–5-angular or 8–10-costate (*Helenieæ*). Pappus of hairs (*Senecioneæ*), or paleoles, or coroniform scales, or short (*Anthemideæ*); or none, sometimes (*Euheliantheæ*) replaced by 2–4 aristate prominences, bare or glochidate. Herbaceous, rarely woody plants, often odorous, aromatic, with opposite, oftener alternate leaves.—161 genera.

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[1] DC. *Prodr.* v. 217.—*Asteroideæ* Less. *Syn.* 161.—B. H. *Gen.* ii. 165.—*Asterineæ* Nees, *Aster.* 3.—*Amelleæ* DC.—*Heterothalameæ* DC.—*Erigereæ* DC.—*Heteropappeæ* DC.—*Bellieæ* DC.—*Chrysocomeæ* DC.—*Baccharideæ* Less. *Syn.* 200.—*Plucheineæ* DC.—*Inuleæ* Cass. *Ann. sc. nat.* (1829), 20.—*Inuloideæ* B. H. *Gen.* ii. 166, Trib. 4.

[2] On the meaning of this word, indicating a corolla, differing from the true ligulate corolla, see H. Bn. *Bull. Soc. Linn. Par.* 261.

[3] Cass. *Op. phyt.* iii. 54 (part.).—Less. *Syn.* 89.—*Calendulaceæ* DC. *Lindl. Nat. Syst.* (ed. 2), 261; *Prodr.* vi. 449 (*Cynarearum* subtrib.).—B. H. *Gen.* ii. 167, Trib. 9.

[4] *Arctotideæ* Cass. *Ann. sc. nat.* (1829), 10.—DC. *Prodr.* vi. 484 (*Cynarearum* subtrib.).—B. H. *Gen.* ii. 167, Trib. 10.

[5] Cass. *Op. phyt.* iii. 57 (part.).—Less. *Syn.* 221.—*Senecionideæ* Less. *Syn.* 218.—DC. *Prodr.* v. 497, Trib. 4.—*Euxenieæ* DC.—*Millerieæ* DC.—*Silphieæ* DC.—*Melampodieæ* DC.—*Parthenieæ* DC.—*Heliopsideæ* DC.—*Rudbeckieæ* DC.—*Coreopsideæ* DC.—*Bidentideæ* Less.—*Verbesineæ* Less.

[6] *Senecioideæ* B. H. *Gen.* ii. 167, Trib. 8.

[7] *Anthemideæ* B. H. *loc. cit.* Trib. 7.

VIII. Ambrosieæ.[3]—Capitules unisexual-monœcious or heterogamous. Male flowers ordinarily numerous, interspersed on the receptacle with paleoles often setiform and surrounded by bracts free or united. Gynœcium of male flowers generally reduced to the style. Female flowers without perianth or with a small tubular or rudimentary corolla, arranged around the male flowers or collected in small numbers (1–4) in a saclike involucre, bearing a variable number of horns or points, and extended above in a cone with a small perforation for the passage of the style.—3 genera.

We should bear in mind that none of these series is absolutely definite, and, the affinities being numerous in a group so natural, there are types which connect many of the series with each other. Moreover none of the characters upon which classifiers have based their divisions of the Compositæ can be admitted as preponderating, and, for the most part, there is, in this group, no absolute subordination of the characters ranged more or less as of inferior rank. With these reservations, the classification is that adopted by Tournefort which, with additions and modifications in accordance with new accessions to science, appears the most simple, clear, and natural. We know that he divided the Compositæ into *Flosculose*, *Semiflosculose*, and *Radiate*, according as the capitules consisted of flowers all regular, all irregular, or regular surrounded by irregular. Linneus made four groups of its *Polygamy* distinguished by the names *equal*, *superfluous*, *useless*, and *necessary*.

Helenieæ Cass. *Opusc. phyt.* iii. 36.—Endl. *Gen.* 420, Subtrib. 5.—*Helenioideæ* B. H. *Gen.* ii. 167, Trib. 4.

Helianthoideæ B. H. *Gen. loc. cit.* 166, Trib. 5.

[3] DC. *Prodr.* v. 522 (*Senecionidearum* Div. 5).—B. H. *Gen.* ii. 166 (*Helianthoidearum* 4).—Payer, *Fam. nat.* 29, Fam. 8.—*aceæ* Link, *Handb.* i. 816.

After them, PAYER[1] justly remarks, "CASSINI, DE CANDOLLE, &c., have sought a classification of the Compositæ based on the form of the style branches and on the disposition of the stigmatic papillæ thereon. It does not appear to us that they have succeeded in making more clear the distinction of these plants while increasing the difficulty. We shall therefore return to the divisions of TOURNEFORT, which, at least, have the advantage of being easy to determine, while making some additions which the progress of science has rendered necessary." PAYER divided the family into seven sections: *Carduaceæ*, *Chicoraceæ*, *Nassavieæ*, *Centaureæ*, *Chrysanthemeæ*, *Printzieæ*, *Chaptalieæ*, and he made a separate family of the *Ambrosieæ*.

Finally, only a few characters are constant in all this group: the inferior, one-celled[2] and uniovulate ovary; the anatropous[3] and ascending[4] ovule; the indehiscent fruit with exalbuminous embryo; the gamopetalous and perhaps syngenious[5] corolla and absence of a true calyx. Some others are nearly but not absolutely constant: the inflorescence in simple[6] capitules, the valvate prefloration of the perianth, the dry pericarp. Others, again, are extremely variable and may serve to distinguish the genera, but never, in our view, absolutely; the position of the capitules, the structure of the pappus when present, the basal form of the anthers and the divisions of the style;[7] the bare, alveolate, fimbrillate or paleaceous condition of the receptacle; the structure of the involucre, the contents of the tissues,[8] the odour or taste of the organs of vegetation.[9]

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[1] *Lec. Fam. nat.* 19.

[2] R. BROWN (*Obs. Compos.* in *Trans. Linn. Soc.* xii. 89; *Misc. Works*, ed. BENN. ii. 270) has observed that in this ovary there are often two threads which, originating face to face at the level of the ovular insertion, rise more or less united to its wall to near the summit (*Chordæ pistillares*), and which have been considered as formed of the leading tissue of these plants. PAYER five-and-twenty years ago demonstrated by organic development, the dicarpellous structure of the Compositæ, suspected even before him.

[3] It never has more than one coat; is very imperfect and sometimes even almost nil.

[4] It is never exactly erect, that is basal; but its insertion is more or less excentric; its raphe is anterior.

[5] In some cases the anthers are simply in contact.

[6] Sometimes these are compound capitules; sometimes capitules of contracted cymes.

[7] The true stigmatic tissue is considered as represented by the two narrow glandular bands at the margin of the internal face of these divisions, which must not be confounded with the collecting hairs of the outer surface.

[8] These are sometimes, according to the series, bitter principles, volatile essences, or, as in the Cichorieæ, &c., an abundant latex. Its reservoirs, especially in the Chicoraceæ, have been studied by Mr. TRECUL (*comp. rend. Acad. sc.* lxi. 785; *Adansonia*, vii. 169), who has recalled the labours on this question of K. H. SCHULTZ, UNGER, SCHACHT, HANSTEIN, &c. (For researches in the anatomy of the stems of the Compositæ, in which scarcely anything had been done, see OLIV. *Stem Dicot.* 19.)

[9] Generally (the exceptions are numerous)

AFFINITIES.—The Compositæ are related chiefly to the Umbelliferæ, the Rubiaceæ, and the Campanulaceæ. From the first they are generally far removed on account of their gamopetalous character; but it is now known that both may have their flowers in capitules of cymes. That is the rule in the Rubiaceæ with non-pedicellate flowers, which generally have not true capitules, and which are sometimes polypetalous. Further, the Compositæ, as most frequently the Rubiaceæ and Umbelliferæ, have a dicarpellous gynœcium, one of the carpels being without an ovule, as is the case in the Dipsacaceæ; and as there are among the Rubiaceæ types with a descending ovule, and others with an ascending ovule (the two directions being observed in the same genus), it is not strictly logical to separate into distinct families the Compositæ, the Dipsaceæ, and the Boopideæ. The Compositæ with ligulate and bilabiate corollas are, in this group, the analogues of the Loniceroæ with irregular corolla and subcapitate flowers among the Rubiaceæ. Let us point out a more distant affinity to the types with superior gynœcium, such as the Stilbeæ and the Brunonieæ. The latter connect the Compositæ with the Campanulaceæ, which strongly remind one of the Cichorieæ, especially by the irregular types of the Lobelieæ, thanks to the inferior ovule, the frequent dicarpellous character, the union of the anthers and the milky juice of most of the organs; but the Campanulaceæ nearly always have an indefinite number of ovules, a fleshy or capsular fruit and albuminous seeds.

GEOGRAPHICAL DISTRIBUTION.[1]—While this family is the most numerous of the vegetable kingdom, it is also the most widely distributed over the surface of the globe, being found abundantly in the temperate and warmer regions, most abundantly in tropical and subtropical islands, and in continental tracts not far from the shore, the numbers diminishing somewhat towards the equator and more rapidly towards the poles.[2] In temperate Europe the Compositæ form one-seventh of the entire phænogamic vegetation,

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the Asteroæ and Heliantheæ are said to be distinguished by their aromatic odour, the Cardueæ by their bitter taste, the Cichorieæ by their nauseous and viscous juice.

[1] See LECOQ, *Géogr. bot.* vii. 1–291.

[2] ENDLICHER, *Enchirid.* 252.

and the same is the case in a great part of North America. But as we advance westward to such regions as New California the ratio diminishes to one-fifth. In extra-tropical Africa the proportion is about the same as in France, but in the south it increases to a sixth; it is true the regions bordering on the Cape have been well explored, so that the Synantheneæ of these parts are pretty well all known. With us the relative number of Compositæ increases as we ascend mountains, and the same is true in the Andine regions of America. In tropical and subtropical regions the proportion of Compositæ is much less, only $\frac{1}{33}$ in Java, $\frac{1}{22}$ at Timor and Norfolk Island, $\frac{1}{16}$ in the Sandwich Islands. In the islands off the American and African coasts, these plants often assume an arborescent character: thus to Juan Fernandez belong *Dendroseris*, *Robinsonia*, and *Vendredia;* to St. Helena, *Melanodendron*, *Commidendron*, &c. *Fitchia*, equally woody, is found in Otahiti and neighbouring isles, and in Madagascar grows *Synchodendron*, consisting, it is said, of large trees. The general mode of distribution of the family applies equally to some of its series as the Carduеæ, Cichoreæ, Heliantheæ, and Astereæ. But it is not so with the Ambrosieæ, the Mutiseæ, the Vernonicæ proper, and the little group Arctoteæ among the Senecioneæ. Nearly all the Ambrosieæ are western American; only a few examples are scattered over the temperate regions of the old world. The Mutiseæ are generally tropical and American; the number being much less in tropical Africa, still less in Asia, and the Siberian types are quite exceptional in a geographical point of view. Three-fourths of the true Vernonicæ belong also to tropical and subtropical America. The Arctoteæ, on the other hand, are nearly all from south or tropical Africa, and there is only one, *Cymbonotus*, in Australia. In the habit of a great number of species, especially among the Helichryseæ, the latter country presents a strong analogy to what is observable at the Cape. The same is, in part, true of Madagascar; and if in this great island there are many monotypic genera, peculiar to the country, it may perhaps be because the flora is still too imperfectly known or has been only superficially studied; circumstances which have often compelled us to include them in the generic groups of Asia and tropical Africa. The Vernonieæ are also numerous in Madagascar. In islands of extreme situation, as Auckland and Campbell, the exceptional herbaceous genera, such as *Celmisia*, *Pleurophyllum*, &c., give quite a special character to the vegetation, and furnish a powerful argument for the theory of multiple centres of creation. In Europe the Compositæ ascend very high towards the pole: *Tussilago*, *Tanacetum*, *Solidago*, to 70°, *Eupatorium* to 60°, the Easter daisy (*Bellis perennis*) to 65°, *Erigeron* to 80°, *Senecio*, *Cirsium*, *Centauria*, and *Bidens* to 68°. There are Achilleæ, Taraxacums, and Gnaphaliums as far as Cape North, 71°. *Taraxacum palustre* grows at Spitzbergen, 80°, and some Compositæ are found in both hemispheres as far as the line of perpetual snow.[1]

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[1] A. P. DE CANDOLLE, in 1838, treated specially of the geographical distribution of the Compositæ and of their statistics in one of his memoirs (X). As in the Leguminosæ-Papilionaceæ, we cannot exhibit the applied species till after the enumeration of the genera to which they belong.

GENERA.

I. CARDUEÆ.

1. **Carduus** T.—Flowers capitate, homomorphous hermaphrodite fertile; receptacle of each very concave purse-like and enclosing adnate germen. Pappus of ∞ hairs, ∞-seriate, rigid or pliant, simple, barbellate or serrulate (*Eucarduus*, *Serratula*, *Silybum*, *Tyrimnus*) or plumose (*Cynara*, *Galactites*, *Cnicus*), inserted outside of mouth of receptacle and girt by a short slightly prominent ring thereof. Corolla tubular; tube straight or more or less curved; lobes of subregular or more or less irregularly oblique limb 5, unequal, valvate. Stamens 5, alternating with lobes of corolla; filaments inserted in tube, oftener pilose or papillose at margin, free or by means of hairs united in a tube and spuriously 1-adelphous (*Tyrimnus*, *Silybum*, *Galactites*); anthers marginally coherent in a tube, crowned with a produced connective, and extended at sagittate base in two more or less caudate auricles; cells 2, internally rimose. Ovary inferior, 1-celled; style more or less dilated at base, 2-lobed above; branches short or more rarely somewhat obtusely elongate. Ovule 1, inserted excentrically a little above the base of the cell, anatropous; micropyle inferior. Fruit dry, smooth, or 5–10-costate, umbonate at apex and crowned with pappus, inserted by a basal or sometimes more or less lateral (*Serratula*) areole, indehiscent; seed suberect exalbuminous; cotyledons of fleshy oily embryo plano-convex; radicle short inferior.—Annual or perennial herbs, simple or branched; leaves alternate, often decurrent, sinuate, dentate, serrate, pinnatifid or pinnatisect; teeth or lobes ciliate or oftener spinose; capitules terminal, pedunculate, solitary or cymose, sometimes subsessile; receptacle flat or slightly concave, bare, foveolate, or shortly fimbrilliferous (*Onopordon*), oftener setose between the flowers;

bracts of involucre ∞, unequal, imbricated, spinescent at apex or terminating in a sharp rigid appendage (*Cynara*, *Silybum*), sometimes (*Silybum*) spinose-margined. (*Temperate and warm regions of old world.*)—See p. 1.

2? **Cousinia** Cass.[1]—Flowers[2] nearly of *Carduus*, homomorphous, the exterior sometimes few neutral. Receptacle flat setose-paleaceous and anthers, appendiculate at the base, of *Carduus*; auricles of anthers variously setose or plumose; filaments glabrous. Fruit glabrous or sometimes long-villose (*Thevenotia*[3]); style branches narrow; hairs of pappus ∞, 1-seriate, sometimes hardened at dilated base, simple or 0 (*Eucousinia*), sometimes plumose (*Thevenotia*).—Annual or perennial thistle-like herbs; leaves alternate spinose-dentate or lobed; capitules terminal, solitary or cymose; involucre globular or ovoid; bracts ∞, ∞-seriate, imbricate, oftener spinescent; the exterior sometimes (*Thevenotia*) larger foliaceous spinose-lobed.[4] (*Mid. and west. Asia.*[5])

3. **Arctium** L.[6]—Flowers[7] homomorphous hermaphrodite; corolla subregular, valvate, dilated at top of tube. Stamens inserted at the bottom of the dilatation of corolla; filaments free glabrous; anthers long-caudate at base; appendage soft subulate, sometimes subciliate. Style at base girt by epigynous disk; branches linear recurved, surrounded at base by ring of hairs. Fruit compressed, ∞-costate truncate; insertion subbasal; pappus hairs numerous unequal unequally barbellate.—Tall erect herbs; root sometimes thickly conical; leaves alternate or rosulate at base, large, petiolate, oftener cordate at base, not lobed; capitules solitary subsessile or in a terminal cyme; receptacle subcarnose flat or slightly convex, densely setose between the flowers; bracts of subglobular involucre ∞, imbricate, ∞-seriate, somewhat

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[1] *Dict. sc. nat.* xlvii. 503.—DC. *Prodr.* vi. 552.—Endl. *Gen.* n. 2862.—B. H. *Gen.* ii. 467, n. 632.—*Auchera* DC. *Mém. Comp.* t. 11; *Prodr.* vi. 557.

[2] White, yellow, or pink.

[3] DC. *Guillem. Arch. bot.* ii. 331; *Prodr.* vi. 551.—Endl. *Gen.* n. 2861.—B. H. *Gen.* ii. 466, n. 630.

[4] A genus formerly united to *Carduus*, now most recently to *Atractylis* (Boiss. *Diagn. or.* vi. 110).

[5] Spec. about 110. Bieb. *Cent. pl. rar.* t. 44 (*Carduus*).—Deless. *Ic. sel.* iv. t. 72 (*Thevenotia*).—Eichw. *Pl. caucas.* t. 37.—Bélang. *Voy. Ind. or. Bot. ic.*—Jaub. et Sp. *Ill. pl. or.* t. 156–178.—Bushe, *Pl. transkauk.* t. 9.—Boe, *Mém. Acad. Pétersb.* sér. 7, ix. n. 2.—Boiss. *Diagn. or.* ser. 2, iii. 52; *Fl. or.* iii. 454 (*Thevenotia*), 458.—Walp. *Rep.* ii. 669; vi. 284; *Ann.* i. 432; ii. 928; v. 354.

[6] *Gen.* n. 923 (not Lamk).—B. H. *Gen.* ii. 466, n. 631.—*Lappa* T. *Inst.* 450, t. 256.—Gærtn. *Fruct.* ii. 379, t. 162.—DC. *Mém. Comp.* 20; *Prodr.* vi. 661.—Endl. *Gen.* n. 2892.

[7] Oftener purplish or violet.

fleshy at base, rigid, at apex long-subulate introrsely glochidiate. (*Temp. Europe, Asia.*[1])

4. **Stæhelina** L.[2]—Flowers[3] nearly of *Carduus;* receptacle long obconical, nearly flat, bare or setose. Bracts of elongated involucre ∞, unequal unarmed, imbricated. Flowers in capitule ∞, equal or sometimes solitary; corolla (of *Carduus*) irregular or sometimes subregular. Anther auricles sometimes rather thick, rugose or lacerate. Fruit[4] glabrous or villose; pappus hairs ∞, rather rigid, 1-seriate, complanate at base and free or shortly connate, barbellate or serrulate above.—Herbs, frutescent at base; branches often virgate; leaves alternate, entire or sinuate, scabrous beneath or white-tomentose; capitules terminal solitary or densely cymose.[5] (*Medit. Reg.*[6])

5. **Saussurea** DC.[7]—Flowers[8] homomorphous (nearly of *Carduus*); involucre subglobular, ovoid or oblong; bracts ∞, ∞-seriate, the longer the more interior, muticous, acute or more rarely scariously appendiculate. Receptacle flat or convex, bare or oftener setose or paleaceous between the flowers. Corolla subregular or unequally 5-fid. Anther auricles various, connate, short or caudiform, ciliate or lacerate. Style branches linear, oftener slightly compressed. Disk around suddenly attenuated base of style rather prominent. Fruit compressed or oftener 4-∞-costate; pappus hairs pluriseriate; the interior longer plumose; the exterior shorter ∞, shortly plumose, denticulate, barbellate or glabrous, girt at base by annular margin of receptacle entire or sometimes (*Hemistepta*[9]) produced in short plumose

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[1] Spec. 1, 2 (descr. 7, 8). Reichb. *Ic. Fl. germ.* t. 811, 812 (*Lappa*).—Schkuhr, *Handb.* t. 227.—Boiss. *Fl. or.* iii. 457 (*Lappa*).—Gren. et Godr., *Fl. de Fr.* ii. 280 (*Lappa*).—Walp. *Rep.* ii. 676; vi. 307.

[2] *Gen.* n. 938.—DC. *Prodr.* vi. 543.—Endl. *Gen.* n. 2858.—B. H. *Gen.* ii. 471, n. 640.—*Barbellina* Cass. *Dict.* l. 440.—*Hirtellina* Cass. *Dict.* l. 440.

[3] "Purplish."

[4] Style generally dilated to the base and below suddenly contracted and surrounded by the top of the conical disk.

[5] ? If of this gen. *Kæchlea* (Endl. *Gen.* Suppl. ii. 48;—B. H. *Gen.* ii. 471), a plant formerly cultivated but not preserved, differing, it is said, in the foliaceous bracts of the involucre; the outer ones being open at the apex.

[6] Spec. 5, 6. Lamk, *Ill.* t. 666, fig. 3, 4 (*Serratula*).—Sibth. *Fl. græc.* t. 845, 846.—Reichb. *Ic. Fl. germ.* t. 810.—Jaub. et Sp. *Ill. pl. or.* t. 397.—Boiss. *Voy. Esp.* t. 106; *Fl. or.* iii. 455.

[7] *Ann. Mus.* xvi. (1810), 198, t. 10–13; *Prodr.* vi. 532.—Endl. *Gen.* n. 2853.—B. H. *Gen.* ii. 471, n. 642.—*Theodora* Cass. *Dict.* liii. (1818), 463.—*Lagurostemon* Cass. *Dict.* liii. 466.—*Heterotrichum* Bieb. *Fl. taur.-cauc.* iii. 551 (not DC.).—*Bennetia* S. F. Gray, *Nat. Arr. brit. pl.* ii. 440.—*Aplotaxis* DC. *Guillem. Arch. bot.* ii. 330; *Prodr.* vi. 538; *Mém. Comp.* t. 10.—Endl. *Gen.* n. 2854.—*Haplotaxis* Walp. *Rep.* ii. 669; vi. 282.—*Eriostemon* Less. *Syn.* 12 (not Sm.).—*Frolovia* Ledeb. ex DC. *Prodr.* vi. 538.—*Cyathidium* Lindl, *Royl. Ill. himal.* 251. t. 56.—*Aucklandia* Falc. *Trans. Linn. Soc.* xix. 23.

[8] Purplish or bluish.

[9] Bge, *Dorp. Jarb. Litt.* i. 221.—Maxim. *Bull. Acad. Pét.* xix. 512; *Mél. biol.* ix. 334 (again defends the genus).—B. H. *Gen.* ii. 1236,

squamules.—Perennial or more rarely biennial herbs, glabrous or variously clothed; leaves alternate, entire, dentate, lyrate or pinnatifid; divisions oftener muticous; capitules terminal solitary or cymose. (*Europe, temp., west., cent., and east. Asia, N. America.*[1])

6? **Goniocaulon** Cass.[2]—Flowers nearly of *Saussurea;* pappus hairs ∞, paleaceous, ∞-seriate, rather short very unequal.[3] Staminal filaments pilose; anther auricles connate caudate.—An erect glabrous annual with angular branched stem; leaves alternate narrow dentate; capitules contracted in irregular corymbiform cymes, few-flowered; involucral bracts muticous, ∞-seriate.[4] (*East. India.*[5])

7? **Warionia** Coss.[6]—Flowers 1-morphous; capitule and involucre broadly subhemispherical of *Saussurea;* bracts rigid acute. Receptacle flat and foveolate, dentately fringed around foveoles. Corolla subregular. Staminal filaments glabrous; anthers sagittate at base; cells polliniferous nearly to base and there shortly calloso-appendiculate. Style branches complanate, externally papillose. Ovary (as fruit) densely sericeous; hairs ascending; pappus hairs ∞, rigid, ∞-seriate scabrous; the interior longer and broader; all inserted in the cupule at top of the achene.—Glabrous unarmed herbs (?); leaves alternate, sinuately pinnatifid; lobes obtusely dentate unequal; capitules[7] few terminal cymose stipitate.[8] (*Morocco Sahara.*[9])

8. **Jurinæa** Cass.[10]—Flowers[11] (nearly of *Saussurea*) homomorphous; involucre oblong, subglobular or broadly subcampanulate;

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n. 642 *a.*—*Hemisteptia* Bge. *Fisch. et Mey. Ind. sem. Hort. petrop.* ii. 38.—DC. *Prodr.* vi. 639.

[1] Spec. 50-60. Jacq. *Fl. austr.* t. 440 (*Serratula*).—Wall. *Pl. asiat. rar.* t. 138.—Deless. *Ic. sel.* iv. t. 67-69 (*Aplotaxis*).—Leder. *Ic. Fl. ross.* t. 59-80.—Dne. *Jacquem. Voy. Bot.* t. 101-103; 104-105 (*Aplotaxis*).—Field, *Sert.* t. 26.—Trauta. *Midd. Reis. Fl. ochot.* t. 29.—Royle, *Ill.* t. 59 (*Aplotaxis*).—Miq. *Ann. Mus. lugd.-bat.* ii. 183.—Fr. et Sav. *Enum. pl. jap.* i. 253.—Boiss. *Diagn. or.* ser. 2, iii. 27; *Fl. or.* iii. 565.—Reichb. *Ic. Fl. germ.* t. 816-818.—Gren. et Godr. *Fl. Fr.* ii. 272.—Walp. *Rep.* ii. 668; vi. 282; *Ann.* ii. 927; iii. 909.

[2] *Bull. Soc. philom.* (1817); *Dict.* xix. 201.—DC. *Prodr.* vi. 558 (*Amberboæ* sect.).—B. H. *Gen.* ii. 472, n. 643.

[3] Larger from the exterior to the interior.

[4] Better a section of *Centaurea?*

[5] Spec. i. *C. indicum.*—*G. glabrum* Cass. *Centaurea indica* Less.—*G. Wallichiana* Less.—*Amberboa Goniocaulon* DC.—*A. Wallichiana* DC.—Wight. *Icon.* t. 479.—*Athanasia indica* Ham.—*Serratula indica* Klein.

[6] B. H. *Gen.* ii. 474, n. 646.

[7] Rather large.

[8] Rather a sect. of *Jurinea* by the character of its receptacle, allied to *Berardia.*

[9] Spec. 1. *W. Saharæ* Coss. herb.

[10] *Bull. Soc. philom.* (1821); *Dict.* xxiv. 287.—DC. *Prodr.* vi. 674.—Endl. *Gen.* n. 2898.—B. H. *Gen.* ii. 473, n. 644.—*Dolomiæa* DC. *Guillem. Arch. bot.* ii. 330; *Prodr.* vi. 542.—*Stechmannia* DC. *Prodr.* vi. 543.—*Derderia* Jaub. et Spach. *Ill. pl. or.* i. 29, t. 67; ii. t. 179, 180, 290.

[11] Oftener purplish.

bracts ∞, gradually unequal unarmed, sometimes lanceolately appendiculate or aristate. Receptacle setose; hairs long or short; sometimes foveolately denticulate or fringed. Fruit glabrous, rugose or tubercular, compressed or few-costate; areole basal or slightly lateral and oblique; apex sometimes (*Jurinocera*[1]) toothed; pappus hairs ∞, unequal, ∞-seriate, rather stiff, entire serrulate, barbellate or plumose, sometimes slightly contorted.—Herbs of various habit; stem branched or short, 1-headed; leaves oftener on one or both sides tomentose or woolly, entire dentate or pinnatifid; capitules small and cymose or rather large or large, solitary or few, stipitate or sessile.[2] (*South and Alpine Europe, west. and mid. Asia.*[3])

9. **Carlina** T.[4]—Flowers[5] (nearly of *Carduus*) 1-morphous; involucral bracts 2–3-morphous; the inmost[6] scariously open-appendiculate; the intermediate (sometimes 0) spinescent-dentately apiculate; the outer foliaceous dentate or pinnatifid spinescent. Receptacle flat; with setosely divided paleæ surrounding the flowers. Flowers of *Carduus;* anthers ciliately caudate at base; style branches shortly free narrowed. Fruit densely villose subbasifixed; pappus paleæ ∞, 1-seriate, deeply divided into long plumose hairs.—Erect herbs or spinous shrubs (*Carlowitzia*[7]);

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[1] The type of which is *Saussurea ceratocarpa* DCNE (*Jacquem. Voy. Bot.* t. 101), a plant improperly referred to *Saussurea*, and remarkable for the angles of the fruit being produced at the apex in rigid erect teeth.

[2] A genus hence allied to *Saussurea*, and from the areole of the achenes being right or sometimes oblique, its place is between the genuine *Cardui* and legitimate *Serratulæ*. With us they are but abnormal sections of *Jurinea :*

Ægopordon BOISS. *Diagn. or.* vi. 112; *Fl. or.* iii. 567 : capitular receptacle shortly setose; achenes longer.

Berardia VILL. *Prosp.* 28; *Fl. Dauph.* iii. 27, t. 22 (not AD. BR.).—B. H. *Gen.* ii. 474, n. 645.—*Arctio* LAMK, *Dict.* i. 235; *Ill.* t. 664.—*Arctium* LAMK, *Fl. fr.* ii. 70 (not L.).—DC. *Prodr.* vi. 543.—*Villaria* GUETT. *Mém. Dauph.* i. 170, t. 19: receptacle foveolate fimbrilliferous; pappus of twisted ciliate-barbellate hairs.

Jurinella JAUB. et SP. *Ill. pl. or.* ii. 101, t. 183–185: stem subnil; pappus plumose.

Outreya JAUB. et SP. *Ill. pl. or.* i. 131, t. 68: achenes rugose (as sometimes in *Derderia*) involucral bracts long acuminate pappus hairs barbellate or plumose.

Polytaxis BGE, *Del. sem. Hort. dorpat.* (1843); *Reliq. Lehman.* 194: involucral bracts transparent at margin; pappus hairs dilated at connate base.

[3] Spec. 35–40. JACQ. *Fl. austr.* t. 18 (*Carduus*).—CAV. *Ic.* t. 90 (*Serratula*).—SWEET, *Brit. Fl. Gard.* t. 103 (*Carduus*).—LEDEB. *Ic. Fl. ross.* t. 490 (*Serratula*).—REICHB. *Ic. Fl. germ.* t. 807 (*Berardia*), 808, 809.—STEV. *Trans. Linn. Soc.* xi. t. 37 (*Serratula*), t. 38 (*Jurinella*). JAUB. et SP. *loc. cit.* t. 65 (*Stechmannia*).—BOISS. *Voy. Esp.* t. 113 *a; Diagn. or.* ser. 2, iii. 50; *Fl. or.* iii. 567.—DELESS. *Ic. sel.* iv. t. 70 (*Dolomiæa*).—TCHIHATCH. *Pl. as min.* t. 33 (*Jurinella*).—GREN. et GODR. *Fl. de Fr.* ii. 269, 271 (*Berardia*).—WALP. *Rep.* ii. 677; vi. 290 (*Derderia*), 309; *Ann.* i. 453; ii. 946; v. 309.

[4] *Inst.* 500, t. 285 (part.).—L. *Gen.* n. 929.—GÆRTN. *Fruct.* ii 384.—DC. *Prodr.* vi. 545 (part.).—ENDL. *Gen.* n. 2859. B. H. *Gen.* ii. 465, n. 628.—*Mitina* ADANS. *Fam. des pl.* ii. 116.

[5] Yellow, white or purplish.

[6] Sometimes white or coloured.

[7] MŒNCH, *Meth.* Suppl. 225.—DC. *Ann.*

leaves alternate, rarely entire, ciliate, dentate or pinnatifid, with spinescent divisions; capitules terminal sessile or stipitate, solitary or cymose. (*Europe, north. continent. and west. ins. Africa, west. and mid. Asia.*[1])

10. **Atractylis** L.[2]—Flowers[3] (nearly of *Carlina*) 1- or oftener 2-morphous; the outer neutral, 1-seriate; the rest hermaphrodite fertile, sometimes diœcious. Receptacle flat fleshy, loaded between the flowers with long transparent paleæ oftener setosely divided. Involucral bracts 3-morphous; the inmost scarious acuminate (oftener coloured), erect not radiating; the intermediate imbricated appressed, obtuse or shortly acuminate; the outermost scarious, rigid or subwoody, entire or oftener spinosely dentate or compoundly spinose resembling lattice-work. Corolla of fertile flowers tubular; of sterile furnished with a subradiating limb. Anther auricles long ciliately barbate caudate. Style surrounded at base by small disk, and at hardened apex very slightly and shortly 2-lobed. Fruit oblong, covered with dense hairs increasing in size *from base to apex; areole basal; pappus hairs rigid, more or less deeply connate at base, barbellately plumose above.*—Spinescent or rarely unarmed herbs; stem erect or subnil; leaves alternate, rosulate at base, pinnatisect, ciliate or dentate; divisions entire unarmed or much oftener spinous; capitules subsessile solitary or terminal at ends of twigs. (*South. Europe, north. cont. and west. ins. Africa, west. Asia, China ?, Japan.*[4])

11. **Xeranthemum** T.[5]—Flowers[6] homomorphous fertile, or sometimes the few exterior female sterile; receptacle depressed flat, loaded with entire or variously divided paleæ[7] surrounding

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Mus. xvi. 208, t. 11.—*Athamus* Neck. *Elem.* i. 85.

[1] Spec. about 12. Jacq. F. *Ecl.* t. 5.—Desf. *Fl. atl.* t. 224.—Waldst. et Kit. *Pl. hungar.* t. 152.—Sibth. *Fl. græc.* t. 836, 837.—Moris, *Fl. sard.* t. 84.—Ten. *Fl. nap.* t. 187.—Webb, *Phyt. canar.* t. 115, 116.—Boiss. *Diagn. or.* ser. 2, iii. 51; *Fl. or.* iii. 447.—Reichb. *Ic. Fl. germ.* t. 740–744.—Gren. et Godr. *Fl. de Fr.* ii. 275.—Walp. *Rep.* vi. 283; *Ann.* ii. 927.

[2] *Gen.* n. 930 (not Vaill.).—DC. *Ann. Mus.* xvi. 157; *Prodr.* vi. 549.—Endl. *Gen.* n. 2860.—B. H. *Gen.* ii. 465, n. 629.—*Crocodilodes* Vaill. *Act Acad. par.* (1718), 172 (not Adans.).—*Acarna* W. *Spec.* iii. 1699.—*Chamæleon* Cass. *Dict.* xlvii. 509.—*Spadactis* Cass. *loc. cit.* 510.—*Anactis* Cass. *loc. cit.* 510.—*Atractylodes* DC. *Prodr.* vii. 48.

[3] Yellow or purplish.

[4] Spec. 12, 13, Cav. *Icon.* t. 54.—Deless. *Ic. sel.* iv. t. 71.—Sibth. *Fl. græc.* t. 838 (*Chamæleon*), 839 (*Acarna*).—Desf. *Fl. atl.* t. 225, 226.—Miq. *Fl. ind.-bat.* ii. 211.—Boiss. *Fl. or.* iii. 451.—Reichb. *Ic. Fl. germ.* t. 745.—Gren. et Godr. *Fl. de Fr.* ii. 279.—Walp. *Rep.* vi. 284; *Ann.* ii. 927.

[5] *Inst.* 499 (part.), t. 284.—L. *Gen.* n. 947 (part.).—DC. *Prodr.* vi. 528.—Endl. *Gen.* n. 2850.—B. H. *Gen.* ii. 463, n. 624.—*Xeroloma* Cass. *Dict.* lix. 120.—*Harrisonia* Neck. *Elem.* i. 84 (not R. Br.).

[6] Pink, white or bluish.

[7] Scarious transparent, sometimes in gardens full coloured-petaloid and equal to the inner

the axillary flowers. Involucre subcampanulate or oblong; bracts ∞, unequal, imbricated, ∞-seriate; the inmost erect or flattened, sometimes coloured subpetaloid; the outer smaller to the base, often scarious. Corolla regular or sometimes (in ray) sub-2-labiate; lips unequal. Anthers at sagittate base auriculate or long appendiculate, sometimes muticous. Fertile achene externally villose, crowned with hairs of pappus few or ∞, sub-1-seriate, aristate-acuminate scabrous or serrulate, more or less dilated to the base.—Annual unarmed hoary herbs, little or much branched; leaves alternate, sometimes rosulate at the base, narrow entire; capitules terminal on twigs solitary long pedunculate.[1] (*East. Medit. regions.*[2])

12. **Cardopatium** J.[3]—Flowers[4] subhomomorphous fertile (nearly of *Xeranthemum*); corolla lobes unequal valvate; with deep unequal clefts; the interior extending nearly to the base. Anthers long sagittate at base; appendages caudate, long retrorsely hirsute. Style somewhat dilated at base, at apex two short erect lobes. Fruit subovoid and covered with sericeous hairs ascending and gradually passing into the unequal sub-2-seriate acuminate hairs of the pappus.—Perennial herbs; thistle-like in habit; leaves alternate once or twice pinnatisect; divisions spinescent; capitules in short terminal corymbiform sub-1-parous cymes; receptacle densely setose; involucral bracts pluriseriate, imbricated; the inmost membranous subpaleaceous, at apex shortly spinescent; the outer gradually narrower stiffer and longer pinnately or pectinately spinescent lattice-like.[5] (*North. west. Africa, the East.*[6])

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bracts of the involucre (whence the head is taken for a double flower).

[1] Sections of the genus with us are:

Amphoricarpos Vis. *Fl. dalm.* ii. 27, t. 10, fig. 2 (*Jurinea*); t. 10 *bis.*—B. H. *Gen.* ii. 465, n. 627.—H. Bn, *Bull. Soc. Linn. Par.* 265; radial flowers few female or 0; capitules small.

Chardinia Desf. *Mém. Mus.* iii. 445, t.21—DC. *Prodr.* vi. 530.—Endl. *Gen.* n. 2851.—B. H. *Gen.* ii. 464, n. 625: fruit more or less winged; radial flowers few female.

Siebera J. Gay, *Mém. Soc. Hist. nat. Par.* iii. 343 (not Reichb.).—DC. *Prodr.* vi. 531.—Endl. *Gen.* n. 2852.—B. H. *Gen.* ii. 464, n. 626: folioles of involucre subspinescent; radial flowers few neuter.

[2] Spec. about 8. Jacq. *Fl. austr.* t. 388—Reichb. *Iconogr.* t. 639–641; *Ic. Fl. germ.* t. 737, 738; 739. 816 (*Amphoricarpus*).—J. Gay, *loc. cit.* 358, t. 7; 366, t. 8 (*Chardinia*)—Boiss. *Fl. or.* iii. 444, 446 (*Chardinia*), 447 (*Siebera*).—Willk. et Lge, *Prodr. Fl. hisp.* ii. 127.—Gren. et Godr. *Fl. de Fr.* ii. 281.—Walp. *Rep.* ii. 667; vi. 281; *Ann.* i. 431 (*Amphoricarpos*).

[3] *Ann. Mus.* vi. 324.—DC. *Prodr.* vi. 528.—Endl. *Gen.* n. 2849.—B. H. *Gen.* ii. 463, n. 623.—H. Bn, *Bull. Soc. Linn. Par.* 262.—*Brotera* W. *Spec.* iii. 2399 (not Cav.).—*Cardopatum* Pers. *Enchir.* ii. 500.

[4] Bluish, white.

[5] Like *Carlina*.

[6] Spec. 2? Sibth. *Fl. græc.* t. 844 (*Carthamus*).—Dur. *Expl. Alg.* t. 56.—Spach, *Ann. sc. nat.* ser. 3, v. 233.—Jaub. et Sp. *Ill. pl. or.* t. 426.—Boiss. *Fl. or.* iii. 442.

13. **Centaurea** L.[1]—Flowers[2] 2-morphous; the radial neutral (sometimes absent); the discal hermaphrodite fertile. Discal corollas subregular or oftener irregular (of *Carduus*); tube slender more or less curved; lobes of limb 5–6, valvate. Radial corollas generally broader; tube shorter; lobes of open limb broader unequal, induplicately valvate. Anthers crowned with a produced sometimes rigid connective, sagittate at base; auricles variously elongate or caudate; caudæ contiguous or coalite, entire or variously divided. Insertion of ovule subbasal or more or less *excentric; style suddenly attenuated from base and girt with epigynous disk, a little higher dilated and under two erect or* variously connate linear or lanceolate rather obtuse and shortly open branches, often girt with a ring of hairs various in form. Fruit subovoid or oblong, compressed or 4-∞-gonal or costate, glabrous or variously villose; areole more or less oblique or lateral; pappus hairs ∞-seriate, unequal or 2-morphous; the

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[1] *Gen.* n. 984.—J. *Gen.* 174.—Lamk, *Dict.* i. 663; Suppl. ii. 147; *Ill.* t. 703.—Less. *Syn.* 7.—DC. *Prodr.* vi. 565.—Spach, *Suit. à Buffon*, x. 65.—Endl. *Gen.* n. 2871.—Payer, *Organog.* 640, t. 134; *Fam. nat.* 23.—B. H. *Gen.* 477, n. 654.—*Jacea* T. *Inst.* 443, t. 254.—Cass. *Dict.* xliv. 36.—*Cyanus* T. *Inst.* 445, t. 254.—Mœnch, *Meth.* 560.—*Centaurium majus* T. *Inst.* 449, t. 256.—*Centaurium* Cass. *Dict.* vii. 376; xliv. 39.—*Bielzia* Schur, *Enum. pl. Trans.* 409.—*Platylophus* Cass. *Dict.* xliv. 36.—*Phrygia* S. Gray, *Arr. brit. pl.* ii. 441.—*Psephellus* Cass. *Dict.* xliii. 488.—*Pterolophus* Cass. *Dict.* xliv. 34.—*Heterolophus* Cass. *Dict.* l. 250.—*Xanthopsis* C. Koch, *Linnæa*, xxiv. 422.—*Plectrocephalus* Don, *Sweet Brit. fl. Gard.* ser. 2, t. 51.—*Leptcranthus* Neck. *Elem.* i. 73.—*Stenolophus* Cass. *Dict.* l. 499.—*Lophaloma* Cass. *Dict.* xliv. 37.—*Odontolophus* Cass. *Dict.* l. 252.—*Melanoloma* Cass. *Dict.* xxix. 472.—*Calcitrapa* J. *Gen.* 173.—Cass. *Dict.* xliv. 38.—*Hippophæstum* Gray, *Arr. brit. pl.* ii. 443.—*Leucantha* Gray, *loc. cit.*—*Mesocentron* Cass. *Dict.* xliv. 38.—*Triplocentron* Cass. *loc. cit.*—*Verutina* Cass. *loc. cit.*—*Seridia* J. *Gen.* 173.—*Podia* Neck. *Elem.* i. 72.—*Pectinastrum* Cass. *Dict.* xliv. 38.—*Hymenocentron* Cass. *Dict.* xliv. 37.—*Cheirolophus* Cass. *Dict.* l. 250.—*Polyacantha* Gray, *loc. cit.* ii. 443.—*Philostizus* Cass. *Dict.* xxxix. 498.—*Ptosimopappus* Boiss. *Voy. Esp.* 739; *Diagn. or.* x. 104; ser. 2, iii. 60; *Fl. or.* iii. 613.—*Cheirolepis* Boiss. *Diagn.* x. 103.—*Acrocentron* Cass. *Dict.* xliv. 37; l. 253.—*Tomanthea* DC. *Prodr.* vi. 564.—*Phæopappus* Boiss. *Diagn.* vi. 122.—*Hymenocephalus* Jaub. et Sp. *Ill. pl. or.* iii. 12, t. 109.—*Spilacron* Cass. *Dict.* l. 238.—*Acrolophus* Cass. *Dict.* l. 253.—*Amblyopogon* Fisch. et Mey. ex DC. *Prodr.* vi. 561.—*Stizolophus* Cass. *Dict.* li. 49.—*Ætheopappus* Cass. *Dict.* l. 250.—*Microlophus* Cass. *Dict.* xliv. 37.—*Piptoceras* Cass. *loc. cit.* l. 469; liv. 487.—*Mantisalca* Cass. *Bull. Soc. philom.* (1818), 142.—*Microlonchus* Cass. *loc. cit.*; *Dict.* xxix. 80.—DC. *Prodr.* vi. 562.—Endl. *Gen.* n. 2867.—*Crocodilium* J. *Gen.* 173.—Cass. *Dict.* xii. 19.—*Ægialophila* Boiss. *Diagn. or.* x. 105—*Amberboa* DC. *Prodr.* vi. 558.—*Tetramorphæa* DC. *Guillem. Arch. bot.* ii. 331; *Prodr.* vi. 609.—*Chartolepis* Jaub. et Sp. *Ill. pl. or.* iii. 136.—*Hyalæa* Jaub. et Sp. *Ill. pl. or.* 19, t. 214–217, 292.—*Chryseis* Cass. *Dict.* ix. 154.—*Acroptilon* Cass. *Dict.* l. 464.—DC. *Prodr.* vi. 662.—*Phalolepis* Cass. *Dict.* l. 248.—*Antaurea* Neck. *Elem.* i. 70.—*Callicephalus* C.-A. Mey. *Enum. pl. cauc.* 66.—*Chartolepis* Cass. *Dict.* xliv. 36. *Malacocephalus* Tausch, *Flora* (1828), 481.—*Halocharis* Bieb. (ex Turcz.).—*Rhaponticum* DC. *Ann. Mus.* xvi. 188; *Prodr.* vi. 663.—Cass. *Dict.* xli. 309.—Endl. *Gen.* n. 2894.—*Hookia* Neck. *Elem.* i. 70.—*Cestrinus* Cass. *Dict.* viii. 24.

[2] White, yellow, bluish, violet or fuscous, sometimes ochrous or dingy purple, sometimes very sweet-smelling.

exterior either gradually or suddenly shorter; all or some linear or more or less compressed or paleaceous, entire, serrulate, barbellate or plumose, caducous or more or less persistent, sometimes 0, girt at the base by the short and entire ring of the top of the receptacle.—Annual or oftener perennial herbs; variously covered; stem various, sometimes subnil; leaves rosulate at base or higher alternate, sometimes decurrent, entire, dentate, incised, lobed or once or twice pinnatisect; capitules subsessile or oftener pedunculate, solitary or corymbiform cymose; receptacle flat or nearly so, densely setiferous; bracts[1] of subglobular or ovoid involucre unequal (the lower gradually the shorter), ∞-seriately imbricated, entire or subentire, or oftener laterally ciliate or spinose and with a various apical appendage scarious or spinescent entire, ciliate or lacerate; the exterior sometimes (*Carbeni*[2]) broader foliaceous and spinescent.[3] (*Cold, temp. and warm regions of the whole world.*[4])

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[1] Concerning the nature of the involucral bracts of *Centaurea*, etc., cf. Clos, *Ann. sc. nat.* ser. 3, xvi. 40.

[2] Adans. *Fam. des pl.* ii. 116.—*Carbenia* B. H. *Gen.* ii. 482, n. 655.—*Cnicus* Vaill.—Gærtn. *Fruct.* ii. 385, t. 162 (not L.).—Endl. *Gen.* n. 2872.—Boiss. *Fl. or.* iii. 705.

[3] The sections of this genus are scarcely defined:

a. *Volutaria* Cass. *Dict.* xxxix. 500.—*Volutarella* Cass. *Bull. Soc. philom.* (1816); *Dict.* lviii. 451.—DC. *Prodr.* vi. 559 (*Amberboa* sect.).—B. H. *Gen.* ii. 476, n. 651.—*Lacellia* Viv. *Fl. lyb.* 58, t. 22, fig. 2.—*Cyanopis* Cass. *Dict.* xliv. 39.—*Cyanastrum* Cass. *loc. cit.*—? *Stephanochilus* Coss. et Dur. in exs. algor.—*Oligochæta* C. Koch, *Linnæa*, xvii. 42: involucral bracts acute or simply spinescent; fruit obovoid, 10–15-costate; stem annual; leaves unarmed.

b. *Rhacoma* Adans. *Fam. pl.* ii. 117 (not L.).—*Leuzea* DC. *Fl. fr.* iv. 109; *Ann. Mus.* xvi. 203, t. 14; *Prodr.* vi. 665.—Endl. *Gen.* n. 2895.—B. H. *Gen.* ii. 477, 1237, n. 653.

c ? *Tricholepis* DC. *Guillem. Arch. bot.* ii. 515; *Prodr.* vi. 563.—Endl. *Gen.* n. 2868.—B. H. *Gen.* ii. 475, n. 649: involucral bracts aristate-mucronate or acuminate otherwise inappendiculate; style branches thin; fruit compressed or obtusely angled; leaves unarmed.

d. *Stictophyllum* Edgew. *Trans. Linn. Soc.* xx. 78: pappus plumose; point of outer involucral bracts short; leaves unarmed.

e. *Zœgea* L. *Mantiss.* 15.—DC. *Prodr.* vi. 562.—Endl. *Gen.* n. 2866.—B. H. *Gen.* ii. 477, n. 652: involucral bracts rigidly pectinate-ciliate; fruit girt around pappus with a short 2- or 3-plicate ring; stem annual; leaves unarmed.

f. *Crupina* Cass. *Dict.* xii. 67.—Less. *Syn.* 6.—DC. *Prodr.* vi. 565.—Endl. *Gen.* n. 2870.—B. H. *Gen.* ii. 476, n. 650.—H. Bn, *Bull. Soc. Linn. Par.* 27: bracts of capitule elongate; margins somewhat scarious (fuscate) to apex; staminal filaments shortly papillose-ciliate; anther appendages various; lower areole of fruit subbasal or oblique; inner pappus hairs short paleaceous-squamose; the rest to outermost shorter, stem annual; leaves unarmed. ? Allied to this *Plagiobasis* Schrenk, *Bullet. phys.-math. Acad. Petersb.* iii. n. 7, ex Boiss. *Fl. or.* iii. 64.—Bge, *Rel. Lehm.* 361, of which the involucral bracts are said to be exappendiculate, the anthers long caudate, style 2-fid, achenes villose, areole lateral, stem annual, lower leaves lyrately pinnatifid and habit of *Crupina* ?

g ? *Myopordon* Boiss. *Diagn. or.* vi. 107; *Fl. or.* iii. 565.—B. H. *Gen.* ii. 474, n. 647: involucral bracts appendiculate; appendage of the inner bracts scarious; of the middle spinescent; of the outer short or 0; areole of fruit slightly oblique; pappus hairs unequal; the outer gradually shorter; stem lanate; twigs short spinescent.

[4] Spec. about 350 (descr. ad 420). Jacq. *Ecl.* t. 10; *Fl. austr.* t. 320; *Ic. rar.* i. t. 177;

14. **Carthamus** T.[1]—Flowers[2] homomorphous hermaphrodite, or the exterior sometimes female or neuter; corollas curved with a slender tube; limb subregular, more or less dilated at base, 5-lobed, valvate. Stamens inserted at the hollow; filaments glabrous or variously pilose; anthers caudate at base; caudæ contiguous fimbriate. Style slender, girt at base with epigynous disk, at apex divided into short or elongate slender or complanate branches and below these papillosely pilose. Fruit glabrous, smooth or corrugated, compressed or obtusely 4-angular; faces sometimes squamose; areole oblique or lateral; pappus 0 (*Eucarthamus*); or all or the interior crowned with serrulate, plumose or narrow paleaceous (*Carduncellus*[3]) or broader paleaceous (*Kentrophyllum*[4]) hairs.—Annual or perennial herbs glabrous or woolly, rigid; stem very short or branched; leaves alternate or rosulate at base, spinosely dentate or lobed; capitules solitary or cymose; bracts of globular or ovoid involucre imbricated, ∞-seriate; the outermost foliaceous and the intermediate foliaceously appendiculate spinosely acuminate dentate;[5] the innermost often dry, terminated in a fimbriate or spinous appendage; receptacle flat or slightly convex densely subpaleaceous-setose between the flowers.—(*Medit. reg., south. and mid. Europe, mid. Asia, the Levant, Canary Isles.*[6])

Hort. vind. t. 92.—Lhér, *Stirp.* t. 29 (*Zœgea*). Vis. —*Fl. dalm.* t. 11, 12, 48; 51 (*Crupina*). —Sibth. et Sm. *Fl. græc.* t. 900–917.—Deless. *Ic. sel.* iv. (*Tricholepis*).—Bieb. *Cent. pl. rar.* t. 46, 53.—Ten. *Fl. nap.* t. 84, 247.—W. et Kit. *Pl. rar. hung.* t. 178, 195, 219.—Brot. *Fl. lus.* t. 32.—Labill. *Pl. syr. Dec.* iii. t. 7 (*Cynara*).—Coll. *Hort. rip.* App. i. t. 6.—Fres. *Mus. Senk.* i. t. 5 (*Zœgea*).—Webb, *Phyt. canar* t. 119 (*Serratula*).—Gaudich. *Freyc. Voy. Bot.* t. 92 (*Leuzea*).—Ledeb. *Ic. Fl. ross.* t. 93.—Jaub. et Sp. *Ill. pl. or.* t. 10, 11 (*Acroptilon*), 207-218, 291, 292, 428.—Wight, *Hook. Comp. to Bot. Mag.* i. 81, t. 4 (*Tricholepis*); *Icon.* t. 1139 (*Tholepis*).—Boiss. *Voy. Esp.* t. 100-105; *Diagn. or* ser. 2, iii. 64; v. 111; *Fl. or.* iii. 591 (*Rhaponticum*), 592 (*Phæopappus*), 603 (*Ætheopappus*), 604 (*Hymenocephalus*), 605 (*Amberboa, Volutarella*), 607 (*Leuzea, Psephellus*), 612 (*Stizolophus, Acroptilon*), 613 (*Ptosimopappus*), 614 (*Plagiobasis*), 695 (*Chartolepis*), 697 (*Zœgea, Crupina*), 700 (*Microlonchus*), 702 (*Callicephalus*), 703 (*Ægialophila*), 704 (*Melanoloma*).—Kl. *Waldem. Reis.* t. 81 (*Tricholepis*).—Remy *C. Gay Fl. chil.* iv. 308 —Benth. *Fl. Austral.* iii. 457.—Harv. and Sond. *Fl. cap.* iii. 609.—Hiern and Oliv. *Fl. trop. Afr.* iii. 436.—Reichb. *Ic. ex.* t. 132; *Ic. bot.* t. 443–447, 642, 811, 963, 964, 716; *Ic. Fl. germ.* t. 748 (*Cnicus*), 749 (*Crupina*), 750–800.—Gren. et Godr. *Fl. de Fr.* ii. 238 (*Rhaponticum*), 240, 263 (*Microlonchus*), 266 (*Crupina*).—*Bot. Reg.* (1840), t. 28. —*Bot. Mag.* t. 494, 1175, 2493, 2551, 3662, 6392.—Walp. *Rep.* ii. 670; vi. 292; *Ann.* i. 445 (*Amberboa, Phæopappus*), 447; ii. 930 (*Amberboa, Ptosimopappus*), 931 (*Ægialophila*), 932 (*Cheirolepis*), 933; iii. 909.

[1] *Inst.* 457, t. 258.—L. *Gen.* n. 931.—Adans. *Fam. pl.* ii. 116.—Gærtn. *Fruct.* ii. 375, t. 161. Lamk, *Ill.* t. 661.—DC. *Prodr.* vi. 612.—Endl. *Gen.* n. 2875.—B. H. *Gen.* ii. 483, n. 656.

[2] White, yellow, purplish or bluish or violet.

[3] Adans. *Fam. des pl.* ii. 116.—DC. *Prodrom.* vi. 614; vii. 304.—Endl. *Gen.* n. 2877.—B. H. *Gen.* ii. 483, n. 657.—*Onobroma* Gærtn. *Fruct.* ii. 380, t. 160 (not DC.).—Endl. *Gen.* n. 2876. —*Lamottea* Pom. *Mat. Fl. atl.* 3.

[4] Neck. *Elem.* i. 86.—DC. *Prodr.* vi. 610.—Endl. *Gen.* n. 2874.—*Heracantha* Link, *Fl. portug.* ii. 205.—*Hohenwarta* West, *Flora* (1820), 1.—*Onobroma* DC. (not Gærtn.).—*Durandoa* Pom. *loc. cit.* 2.

[5] Sometimes unarmed under culture.

[6] Spec. about 30. Vahl, *Symb.* t. 17.—Cav.

15. **Echinops** L.[1]—Flowers[2] in heads solitary with involucral bracts ∞, unequal, imbricate, rigid long-acuminate or spinescent; the interior gradually longer or connate at base; sometimes few or 1, long-spinose. Corolla regular; tube short; lobes of limb 5, deep, elongate, valvate. Stamens 5; filaments short, glabrous; anthers dorsifixed, produced at sagittate base in short or rather long fimbriate or entire auricles. Ovary obtuse; ovule 1, excentric or sub-basal; microphyle posterior; style rather thick, increased below in a ring papillose at back, divided above into rather thick branches finally recurved. Fruit subterete or angular rather villose; pappus of short hairs ∞, free or connate at base subpaleaceous.—Perennial or biennial (thistle-like) herbs, more or less tomentose or canescent; leaves alternate dentate or 1- 2- or 3-pinnatisect; divisions spinescent; heads arranged in a common globular terminal stipitate solitary or cymose capitule; receptacle bracteate and setose between the heads; bracts small reflexed, sometimes few or 0.[3] (*Europe, temp. Asia and America, trop. and subtrop. Africa.*[4])

16? **Gundelia** T.[5]—Flowers polygamous regular; pappus short-tubular, persistent, thinly ciliate at margin. Corolla regular; tube rather long; lobes of subcampanulate limb 5, rather thick, valvate; hollows callosely prominent within. Stamens inserted not far below hollow; filaments short; anthers subsagittate at base; cells polliniferous to obtuse base; connective produced above to a thin plate. Ovary 1-ovulate[6] or

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Ic. t. 128.—Desf. *Fl. atl.* t. 227-230.—Hiern and Oliv. *Fl. trop. Afr.* iii. 439.—Sibth. *Fl. græc.* t. 840-843.—Del. *Fl. æg.* t. 48.—Reichb. *Ic. Fl. germ.* t. 746, 747 (*Carduncellus*).—Boiss. *Voy. Esp.* t. 108 (*Carduncellus*); *Fl. or.* iii. 706, 710 (*Carduncellus*).—Gren. et Godr. *Fl. de Fr.* ii. 237 (*Carduncellus*), 264 (*Kentrophyllum*).—*Bot. Mag.* t. 2142, 2293, 3302.—Walp. *Rep.* ii. 672; vi. 302 (*Kentrophyllum*); *Ann.* ii. 940 (*Carduncellus*).

[1] *Gen.* n. 999.—Less. *Syn.* 13.—DC. *Prodr.* vi. 522.—Spach, *Suit. à Buffon*, x. 98.—Endl. *Gen.* n. 2847.—Payer, *Fam. nat.* 21.—B. H. *Gen.* ii. 462, n. 621.—*Echinopus* T. *Inst.* 463, t. 262.—*Echinanthus* Neck. *Elem.* i. 91.

[2] White, greenish or bluish.

[3] *Acantholepis* Less. *Linnæa*, vi. 88; *Syn.* 13.—DC. *Prodr.* vi. 527.—B. H. *Gen.* ii. 463, n. 622, is a sect. of *Echinopsis* (Jaub. et Sp. *Ill. pl. or.* iii. 99, t. 273, 274.—Bge, *Bull. Pétersb.* vi. 412; *Mél. biol.* iv. 391): capitules hemispherical or finally subglobose; bracts foliaceous surmounting the inflorescence; leaves nearly unarmed.

[4] Spec. about 60. Jacq. f. *Ecl.* t. 44.—Sibth. *Fl. græc.* t. 923-926.—Royle, *Ill.* t. 56.—Vis. *Fl. dalm.* t. 10 ter.—A. Rich. *Fl. abyss.* t. 61.—Trautv. *Dissert.* (1833), c. ic.—Bge, *Bull. Pétersb.* vi. 390; *Mél. biol.* iv. 361.—Jaub. et Sp. *Ill. pl. or.* t. 427.—Boiss. *Diagn. or.* ser. 2, iii. 35; *F. or.* iii. 423; 442 (*Acantholepis*).—Reichb. *Ic. bot.* t. 450, 991, 992; *Ic. Fl. germ.* t. 732-736.—Gren. et Godr. *Fl. de Fr.* ii. 201.—*Bot. Reg.* t. 356.—*Bot. Mag.* t. 932, 2109, 2457.—Walp. *Rep.* ii. 667; vi. 279; *Ann.* i. 430; ii. 923, 926 (*Acantholepis*); vi. 351.

[5] T. *Inst. Cor.* 51, t. 485.—L. *Gen.* n. 1000.—Adans. *Fam. des pl.* ii. 114.—Mill. *Icon.* t. 287.—Gærtn. *Fruct.* ii. 586, t. 163.—Lamk, *Dict.* iii. 60; *Ill.* t. 720.—Less. *Linnæa*, iv. 334; *Syn.* 151.—DC. *Prodr.* v. 88.—Endl. *Gen.* n. 2232.—B. H. *Gen.* ii. 461, n. 619.—H. Bn, *Bull. Soc. Linn. Par.* 85.—*Gundelsheimera* Cass. *Dict. sc. nat.* lvii. 344.

[6] More rarely 3, 4.

sterile in peripheral flowers of glomerule. Disk epigynous fleshy hardly broader than style; style branches 2,[1] rather compressed and obtuse, rough externally with rather long ascending papillæ. Fruit subovoid, contracted at apex, closely girt with a bract, crowned with a cupular pappus.—A perennial herb, lactescent in every part; thistle-like in habit; leaves alternate, sessile oblong pinnatifid; lobes acutely spinescent; flowers[2] in few-flowered glomerules; the central fertile, the peripheral sterile; glomerules enclosed by bracts and bracteoles united in a sac and free and spinescent-dentate at apex, and arranged in a common ovoid capitule[3] foliaceous at base.[4] (*The East.*[5])

II. MUTISIEÆ.

17. **Mutisia** L. F.—Flowers 2-morphous; the radial female, oftener 1-seriate; the discal hermaphrodite, fertile or rarely sterile. Radial corollas labiate; anterior lip long ligulate and open, oftener 3-dentate; posterior linear-2-lobed or 0; the discal corollas tubular; limb more or less unequally 5-dentate or 2-labiate; posterior lip linear-2-lobed, revolute or involute, sometimes very small or scarcely separate from the anterior. Stamens (in radial flowers sometimes small sterile) 5; anthers sagittate, at base produced in long caudate acuminate auricles. Ovary crowned with produced epigynous disk; style of hermaphrodite flowers slender, at apex hairy or glabrous, very shortly 2-lobed. Fruit dry oblong or subturbinate angular glabrous; pappus hairs numerous, 1-seriate, rigid plumose.—Climbing or erect shrubs, glabrous or tomentose; leaves alternate subentire, pinnatisect, pinnatifid or subcomposite; petiole or costa often produced in a tendril; capitules (large) often elongate terminal solitary; receptacle flat or nearly so, bare or shortly pilose; bracts of oblong or subcampanulate involucre ∞, imbricate, ∞-seriate appressed; the exterior gradually the shorter, obtuse or acute at apex; the

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[1] Insertion of ovule slightly excentric; coat simple, very incomplete.

[2] Dusky purple.

[3] More or less web-woolly.

[4] A genus connected with all the series of the family, sometimes ascribed to the *Vernonieæ*, with the milk of the *Cichorieæ* and not unlike *Scolymus*; but with the corolla of the A plant enumerated by more recent authors among the *Arctotideæ*. Flowers in cymules oftener 5–7.

[5] Spec. 1. *G. Tournefortii* L. *Spec.* 1315.—Boiss. *Fl. or.* iii. 421.—*G. glabra* Mill.—*Eryngium syriacum* . . . Mor. *Hist.* iii. 167.—*Silybum Dioscoridis s. Hacub*.

interior sometimes acuminate squarrose open. (*Warm and temp. extratrop. or Andine S. America.*)—See p. 12.

18? **Chionopappus** BENTH.[1]—Flowers[2] (nearly of *Mutisia?*) heteromorphous; the radial 2-3-seriate feminine; the discal hermaphrodite fertile. Radial corollas ligulate; posterior lip 0; discal corollas tubular; limb sub-5-partite; divisions slender elongate suberect. Achenes 10-costate; pappus hairs stout, 1-seriate, long snowy-plumose.—A shrub; leaves opposite, ovate dentate, scabrous above, snowy tomentose beneath; capitules often sessile between the last leaves, nutant; involucral bracts imbricate, ∞-seriate, subcoriaceous; the inmost scarious above; receptacle between the flowers pilose and long aristate-paleaceous.[2] (*N. Peru.*)

19? **Plazia** R. and PAV.[3]—Flowers (nearly of *Mutisia*) hermaphrodite fertile; radial corollas 2-labiate; anterior lip 2-3-dentate; posterior 2-lobed; the discal subregular; lobes of limb 5, linear revolute. Anthers sagittate at base, appendage long produced. Style branches linear erect. Fruit oblong costate; pappus hairs ∞, unequal, ∞-seriate, rigid denticulate or barbellate.—Shrubs; leaves alternate, entire, 1-3-nerved; capitules terminal solitary; involucral bracts ∞, imbricate; the lower gradually the shorter.[4] (*Andine America.*[5])

20? **Phyllactinia** BENTH.[6]—Flowers[7] 2-morphous; the radial female sterile; the discal hermaphrodite fertile; radial corollas shortly tubular; blade open, 3-5-dentate; discal corollas regular; limb campanulate, 5-fid. Anthers at base long ciliately caudate. Style of hermaphrodite flowers very shortly roundly 2-lobed at apex. Radial fruit effete rostrate; discal oblong, at base densely subpaleaceously pilose, 10-costate and long hairy between the ribs. Pappus hairs ∞, shorter than fruit, ∞-seriate rigid obtuse.—An annual woolly branched herb; leaves alternate, petiolate, serrulate; capitules shortly pedunculate; bracts of broad subglobular involucre imbricate subulately acuminate; the lowest

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[1] *Gen.* ii. 485, n. 660.

[2] "A genus (unknown to us) distinguished by its opposite leaves, paleaceous receptacle and ligulate, not bilabiate radial corollas." (B.)

[3] *Prodr. Fl. per.* 104.—DC. *Prodr.* vii. 47.—B. H. *Gen.* ii. 486, n. 663.—*Platzia* ENDL. *Gen.* 502, 8.—*Aglaodendron* REM. *Ann. sc. nat.* ser. 3, xii. 175.

[4] A genus perhaps better reduced to a sect. of *Chuquiraga.* Another sect. of the same genus perhaps is *Gypothamnium* PHIL. *Fl. atacam.* 27, t. 3.—B. H. *Gen.* ii. 486, n. 664: a Chilian shrub (unknown to us) whose radial flowers are female, not hermaphrodite, style branches short and leaves filiform crowded.

[5] Spec. 3, 4. WEDD. *Chl. andin.* i. 12, t. 2.

[6] *Gen.* ii. 488, n. 669.

[7] "Purple?"

4–6, open and surmounting the capitule; receptacle flat alveolate; cavities membranous dentate smaller than the fruit. (*Trop. Africa.*[1])

21. **Pleiotaxis** Steetz.[2]—Flowers[3] homomorphous hermaphrodite fertile; tube of corolla slender curved; limb abruptly dilated campanulate regular, 5-lobed; laciniæ straight valvate. Stamens 5; filaments short, inserted at bottom of limb; auricles at base of sagittate anthers rather short obtuse lanately fimbriate. Style dilated to base, then abruptly attenuated and surrounded by a short tubular disk; branches 2, compressed dilated, terminating in a short cone. Fruit angularly striated; pappus hairs ∞, rigid serrulate unequal.—An erect herb[4] frutescent at base; leaves alternate broadly lanceolate penninerved serrulate, hoary tomentose beneath; a short vaginate petiole at the base; capitules solitary terminal; bracts of oblong involucre ∞, imbricate obtuse rigid; the lower gradually the smaller; receptacle long obconical, rather concave foveolate above; foveoles surrounded by a raised undulated margin. (*Mozambique.*[5])

22. **Erythrocephalum** Benth.[6]—Flowers[7] (nearly of *Pleiotaxis*) fertile; radial corollas 2-labiate; discal regular; lobes erect. Pappus hairs 4, 5, linear, caducous. Other characters of *Pleiotaxis*.[8]—Erect perennial herbs; leaves alternate membranous, hoary lanate beneath, penninerved serrulate; capitules terminal nutant; involucral bracts ∞, unequal; the inner ones passing into linear pales subtending the flowers; receptacle flat. (*Trop. East. Africa.*[9])

23. **Chuquiraga** J.[10]—Flowers[11] 1-morphous fertile or subdiœcious; corolla tube more or less barbate within; laciniæ of limb 5, equal, valvate, or the inner more separate from the rest. Anthers sagittate at base, more or less caudate. Fruit subovoid,

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[1] Spec. 1. *P. Grantii* Benth.—Oliv. *Trans. Linn. Soc.* xxix. 102, t. 68.—Hiern et Oliv. *Fl. trop. Afr.* iii. 442.—*Cullumia* Thoms. *Speke Journ. App.* 638.

[2] *Pet. Moss. Bot.* 499, t. 51.—B. H. *Gen.* ii. 487, n. 667.—H. Bn, *Bull. Soc. Linn. Par.* n. 35.

[3] Purple.

[4] Not bare, as said.

[5] Spec. 1. *P. pulcherrima* Steetz.—Hiern et Oliv. *Fl. trop. Afr.* iii. 440.

[6] *Gen.* ii. 488, n. 668.

[7] "Cochineal."

[8] From which the genus is distinct; the receptacle of *Pleiotaxis* not being bare.

[9] Spec. 4. Oliv. *Trans. Linn. Soc.* xxix. 102, t. 69; *Fl. trop. Afr.* iii. 440.

[10] *Gen.* 178.—Lamk, *Ill.* t. 691.—Less. *Syn.* 96.—DC. *Prodr.* vii. 9.—Endl. *Gen.* n. 2913.—B. H. *Gen.* ii. 488, n. 670.—*Johannia* W. *Spec.* iii. 1705.—*Joannesia* Pers. *Enchir.* ii. 383.—*Joannea* Spreng. *Syst.* iii. 382.—*Flotovia* Spreng. *Syst.* iii. 359.—DC. *Prodr.* vii. 10.—Endl. *Gen.* n. 2908.—*Erinesa* Don, *Trans. Linn. Soc.* xvi. 288.—*Dasyphyllum* H. B. K. *Nov. gen. et spec.* iv. 17, t. 308.—DC. *Prodr.* vii. 3.—*Piptocarpha* Hook. et Arn. *Comp. to Bot. Mag.* i. 110 (not R. Br.).

[11] White, yellow or purplish.

obconical or oblong, oftener villose or sericeous; pappus hairs 1-∞-seriate, glabrous or barbellate (*Gochnatia*[1]), or oftener plumose.—Unarmed shrubs, glabrous, tomentose, glutinous or spinescent;[2] leaves opposite or oftener alternate, entire coriaceous, rigid or membranous, glabrous or variously pilose, penninerved or 1–3-nerved; capitules terminal solitary or cymose, stipitate or sessile; bracts of varied involucre imbricate, unequal, obtuse, acute or spinescent; receptacle nearly flat, between the flowers bare, pilose, fimbrilliferous or paleaceous.[3] (*Trop., extra-trop. and Andine S. America, Himalaya.*[4])

24? **Wunderlichia** Ried.[5]—Capitule homogamous. Corollas regular; laciniæ of dilated limb 5, narrow revolute. Anthers sagittate at base obtusely caudate. Style slender, long exserted, at apex shortly 2-dentate. Fruit subterete lanate; pappus hairs ∞, long complanate simple, ∞-seriate.—A shrub?; branches very densely lanate, finally denudate; leaves closely packed suborbiculate soft thick long and densely lanate; capitules very large; involucral bracts unequal, obtuse coriaceous, lanate at back, imbricate, ∞-seriate; receptacle flat, between the fruit long paleaceous or rigidly setose. (*Brazil.*)

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[1] H. B. K. *Nov. gen. et spec.* iv. 19, t. 309.—Less. *Syn.* 102 (part.).—DC. *Prodr.* vii. 24 (part.).—Endl. *Gen.* n. 2915.—B. H. *Gen.* ii. 490, n. 675.—*Pentaphorus* Don, *Trans. Linn. Soc.* xvi. 296.

[2] Spines axillary often 2-nate.

[3] We make sect. of this genus:

Cyclolepis Gill., ex Don, *Phil. Mag.* xi. 392 (*Cyclopis*); *Guillem. Arch. bot.* ii. 468.—DC. *Prodr.* vii. 28.—B. H. *Gen.* ii. 491, n. 677: pappus hairs barbellate; involucral bracts dry orbicular; style branches erect obtuse; stem often spinescent; leaves hoary small.

Hyalis Don, *Comp. Bot. Mag.* i. 108.—DC. *Prodr.* vii. 28.—Endl. *Gen.* n. 2919.—B. H. *Gen.* ii. 486, n. 662: pappus hairs nearly as in *Cyclolepis*; some plumose above; style branches short; involucral bracts 1- 2- or ∞-seriate; leaves oftener small or few–3-nerved, hoary or glabrous.

Aphyllocladon Wedd. *Chlor. andin.* i. 11, t. 3: leaves minute caducous; branches spartioid, afterwards bare; capitules solitary at ends of branches; inner pappus hairs shortly plumose above (? *Iobaphes* Phil. *Fl. atacam.* 27, t. 4.

Doniophyton Wedd. *Chlor. andin.* i. 7, t. 4.—B. H. *Gen.* ii. 489, n. 671 (*Chuquiraga anomala* Don): corolla subglabrous within; stem herbaceous annual; leaves linear; capitules subsessile between leaves; pappus hairs few-seriate plumose.

Moquinia DC. *Prodr.* vii. 22; *Mém. Comp.* 34, t. 13 (excl. *Siphonisma* DC.).—Endl. *Gen.* n. 2914.—B. H. *Gen.* ii. 490, n. 676.—*Spadonia* Less. *Syn.* 99: capitules generally diœcious; leaves alternate entire; capitules subsessile, often cymose or cymose-racemose.

Anastraphia Don, *Trans. Linn. Soc.* xvi. 295.—DC. *Prodr.* vii. 26.—B. H. *Gen.* ii. 491, n. 680: corolla lobes long rigid subequal; involucral bracts acute or spinescent; pappus hairs 1–2-seriate scabrid; leaves spinose-dentate.

? *Leucomeris* Don, *Prodr. Fl. nepal.* 169.—DC. *Prodr.* vii. 25.—Endl. *Gen.* n. 2928.—B. H. *Gen.* ii. 490, n. 674: flowers all hermaphrodite fertile homomorphous; leaves alternate large entire; capitules in corymbiform cymes. A Himalayan variety.

[4] Spec. 50–55. Field, *Sert. pl.* t. 42, 43.—Wall. *Pl. as. rar.* t. 111 (*Leucomeris*).—Deless. *Ic. sel.* iv. t. 78 (*Leucomeris*).—H. B. *Pl. æquin.* i. 150, t. 43.—Bong. *Mém. Acad. Pétersb.* ser. 6, iii. t. 8, 9 (*Moquinia*).—Pœpp. et Endl. *Nov. gen. et spec.* i. t. 32 (*Flotovia*).—Wedd. *Chlor. andin.* i. 2, t. 4; 5, t. 3 (*Flotovia*).—Phil. *Linnæa*, xxxiii. 111.—A. Gray, *Proc. Amer. Acad.* v. 143 (*Hyalis*).—Griseb. *Cat. pl. cub.* 158 (*Anatraphia*).—Remy, *C. Gay Fl. chil.* iii. 275, 281 (*Flotowia*), 289 (*Gochnatia*), 298 (*Hyalis*).—Griseb. *Symb. Fl. arg.* 211 (*Hyalis, Moquinia*).—Kurz, *For. Fl. brit. Burm.* ii. 78.—Walp. *Rep.* ii. 679 (*Moquinia*); vi. 313, 314 (*Flotowia*), 317 (*Moquinia*); *Ann.* i. 458 (*Moquinia*); v. 311.

[5] B. H. *Gen.* ii. 489, n. 673.—H. Bn, *Bull. Soc. Linn. Par.* n. 36.

25. **Hesperomannia** A. Gray.[1]—"Flowers[2] 1-morphous hermaphrodite fertile; corollas regular thin; laciniæ of limb 5, narrow, not revolute. Anthers long caudate at base. Achenes linear-oblong, glabrous, 5-angular, obscurely 10-costate; pappus[3] hairs ∞, entire numerous, ∞-seriate.—A small unarmed tree; leaves crowded at ends of branches subserrate; capitules (large) cymose at ends of branches, shortly stipitate; bracts of subcampanulate involucre ∞, dissimilar rigid lanceolate; the outermost coriaceous, gradually smaller; the inmost elongate; receptacle flat and bare." (*Sandwich Islands.*[4])

26. **Ainsliæa** DC.[5]—Flowers[6] hermaphrodite, polygamous, often 2-morphous or sometimes diœcious; tube of narrow tubular corolla thin; lobes of limb unequal, sometimes more or less 2-labiate, valvate. Anthers (in female flowers rudimentary or sterile) sagittate at base; appendages long ciliate or barbate. Style branches at apex cuneate, rotundate obtuse, sometimes very short (in male flower sometimes rudimentary). Fruit oblong villose or slightly pilose; pappus hairs ∞, 1-∞-seriate, sometimes unequal, plumose or more rarely (*Myripnois*, *Pertya*, *Macroclinidium*) barbellate or scabrous.—Herbs or shrubs; leaves alternate, sometimes crowded or spuriously verticillate; capitules[7] terminal or subsessile, solitary or spuriously spicate or racemose, often few-flowered; bracts of subcylindrical or narrow-campanulate involucre imbricate or unequal; receptacle narrow bare or very rarely barbate.[8] (*Temp. India, China,*

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[1] *Proc. Amer. Acad.* vi. 554.—B. H. *Gen.* ii. 489, n. 672 (whence char. are derived).

[2] "Yellow."

[3] "Of *Stifftia chrysantha.*"

[4] Spec. 1. *H. arborescens* A. Gray.—Brigh. *Mem. Bost. Soc. Nat. Hist.* i. (1866-69), 527, t. 20.

[5] *Prodr.* vii. 13.—Endl. *Gen.* n. 2929^{1}.—B. H. *Gen.* ii. 493, n. 684.—*Diaspananthus* Miq. *Ann. Mus. lugd.-bat.* ii. 187.

[6] White, pink or purple.

[7] Often few-flowered.

[8] Sections of the genus are:

Myripnois Bge, *Enum. pl. chin. bor.* 38.—DC. *Prodr.* vii. 38.—Endl. *Gen.* n. 2929.—B. H. *Gen.* ii. 494, n. 687: flowers diœcious; capitules lateral between subfasciculate leaves entire. A Chinese plant.

Macroclinidium Maxim. *Bull. Ac. Pétersb.* xv. 375.—B. H. *Gen.* ii. 493, n. 686: capitules axillar to leaves or bracts sessile subspicate; bracts of involucre obtuse; receptacle barbate; leaves rather large not entire, sometimes (spuriously) subverticillate. A Japanese plant.

Pertya Sch. bip. *Bonplandia* (1862), 109, t. 10.—B. H. *Gen.* ii. 493, n. 685: capitules sessile between leaves; leaves crowded; bracts of involucre acute; receptacle bare. A Japanese plant.

[9] Spec. about 15, 16. D.C. *Prodr.* vii. 218, n. 74

27. **Stifftia** Mik.[1]—Flowers[2] 1-morphous, regular hermaphrodite and all fertile. Corolla tubular; lobes 5, valvate, free at apex, long acute, revolute, coherent below as far as the insertion of the stamens; stamens 5; filaments inserted and persistent in corolla, rather short subulate; anthers united in a tube above, acute at apex, produced below insertion in long rigid pointed appendages. Ovarium rather long, 1-ovulate; disk epigynous cylindrical continuous with style; style branches erect rather obtuse compressed. Achenes oftener elongate, glabrous or thinly puberulous; pappus hairs long-subulate rigid, scabrous or serrulate, ∞-seriate.—Glabrous trees or shrubs; leaves alternate entire coriaceous; capitules terminal solitary or cymose; bracts of involucre ∞-seriate, unequal; receptacle small foveolate bare. (*Brazil, Guiana.*[3])

28. **Dicoma** Cass.[4]—Flowers[5] 1- or 2-morphous, or hermaphrodite all fertile, or the exterior female or partly sterile. Corollas tubular; lobes of limb erect or revolute; sometimes sub-2-labiate or subligulate. Basal appendages of anthers more or less barbate or ciliate. Style branches obtuse or complanate. Fruit turbinate densely villose more or less costate; pappus hairs 10-∞, all or part compressed or subpaleaceous, everywhere or above barbellate or plumose.—Branching herbs or shrubs, often canescent; leaves alternate various, entire, sinuate, or denticulate; capitules terminal stipitate or subsessile between the leaves, sometimes in corymbiform cymes; bracts of hemispherical or subcampanulate involucre acute, mucronate or spinescent, often scarious at margin; outermost sometimes narrow-foliaceous; receptacle alveolate, sometimes shortly paleaceous.[6] (*India, trop. Africa.*[7])

(*Hieracium*).—Miq. *Ann. Mus. lugd.-bat.* ii. 187.—Fr. et Sav. *Enum. pl. jap.* i. 263 (*Macroclinidium, Pertya*).—*Bot. Mag.* t. 6225.—Walp. *Ann.* v. 311.

[1] *Del. bras.* 1, t. 1.—Cass. *Dict.* xli. 9.—Less. *Syn.* 103.—DC. *Prodr.* vii. 26.—B. H. *Gen.* ii. 491, n. 679.—*Augusta* Leandr. *Münch. Denkschr.* vii. 235, t. 14.—*Sanhilaria* Leandr. (ex DC.).—*Moçina* DC.—*Aristomenia* Vell. *Fl. flum.* 345; Atl. viii. t. 84.—*Gongylolepis* Schomb. *Linnæa*, xx. 759.

[2] Yellow, showy.

[3] Spec. 4, 5. *Bot. Mag.* t. 4438.—Walp. *Ann.* i. 457 (*Gongylolepis*).

[4] *Bull. Soc. philom.* (1817), 47; *Dict. sc. nat.* xiii. 194.—DC. *Prodr.* vii. 36.—Endl. *Gen.* n. 2930.—B. H. *Gen.* ii. 492, n. 681.—*Macledium* Cass. *Dict.* xxxiv. 39.—*Nitelium* Cass. *Dict.* xxxv. 11.—*Cryptostephane* Sch. bip. *Flora* (1844), 782.—*Schæffnera* Sch. bip. *exs. Kotsch.*—*Xeropappus* Wall. *Cat.* n. 2980.

[5] White, yellow or purple.

[6] We make a sect. of this genus (*Bull. Soc. Linn. Par.* 259) *Hochstetteria* DC. *Prodr.* vii. 287; *Mém. Comp.* t. 6.—Endl. *Gen.* n. 2437^1.—B. H. *Gen.* ii. 492, n. 682: pappus pales to 10, at base paleaceously dilated transparent and barbellate serrate above; capitules stipitate solitary (*Abyssinia*).

[7] Spec. about 17. Wight, *Icon.* t. 1140.—Harv. and Sond. *Fl. cap.* iii. 515.—Sond. *Linnæa*, xxiii. 71.—Hiern and Oliv. *Fl. trop. Afr.* iii. 442, 441 (*Hochstetteria*).—Walp. *Rep.* vi. 318 (*Cryptostephane*).

29? **Anisochæta** DC.[1]—Flowers[2] hermaphrodite fertile, 1-morphous; lobes of subregular corolla 5, narrow, valvate. Anthers at base narrowly setaceous-caudate. Style branches narrow-oblong compressed rather obtuse. Fruit angulate; pappus hairs ∞, sometimes few unequal, long-pointed compressed.—A glabrescent "scandescent" shrub; leaves alternate petiolate, 3–5-nerved, angulate at base, 3-angular-acute, incised-dentate; capitules terminal in straggling-ramose corymbiform cymes (or axillate to the uppermost leaves); involucral bracts acute, imbricately ∞-seriate; the outermost gradually smaller; receptacle shortly conical above epaleaceous.[3] (*South America.*[4])

30. **Seris** LESS.[5]—Flowers all hermaphrodite fertile; limb of tubular corolla 5-fid, subregular or 2-labiate; lobes valvate, revolute. Anther appendages long barbate. Style branches slender rather compressed and obtuse. Fruit villose, 5-costate; pappus hairs rigid scabrous few-seriate.—Glabrous or tomentose herbs; stem foliate at base, branching above; leaves alternate, entire, sinuate or dentate; capitules solitary or in loose cymes; bracts of subcampanulate or obconical involucre obtuse subcucullate or acute, ∞-seriately imbricate, tomentose at back; receptacle nearly flat, bare or fringed. (*Brazil.*[6])

31. **Gerbera** GRONOV.[7]—Flowers[8] 2-morphous; the radial oftener female, 1–2-seriate, sometimes absent; the discal hermaphrodite fertile or partly sterile or sometimes female. Discal corollas 2-labiate; the anterior lip extended in a more or less open 3-dentate or 3-fid ligule; the posterior 2-dentate, subequal to or shorter than the anterior, sometimes 0. Anthers produced in appendages entire, ciliate or lacerate below. Fruit 5-costate or

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[1] *Prodr.* v. 109.—ENDL. *Gen.* n. 2260.—B. H. *Gen.* ii. 493, n. 683.

[2] "Whitish."

[3] A genus, from its anomalous corolla, allied on the one hand to *Eupatorium*, on the other to the *Mutisieæ*, having the stamens and style of the latter.

[4] Spec. 1. *A. mikanioides* DC.—DELESS. *Ic. sel.* iv. t. 9.—HARV. and SOND. *Fl. cap.* iii. 57.

[5] *Linnæa*, v. 253 (part. not W.); *Syn.* 99.—DC. *Prodr.* vii. 19.—ENDL. *Gen.* n. 2909.—B. H. *Gen.* ii. 491, n. 678.

[6] Spec. 2. DON, ex LESS. *Linnæa*, v. t. 3, fig. 76–81 (*Onoseris*).

[7] *L. Gen.* (ed. 1737), *Cor.* 16.—CASS. *Bull. Soc. philom.* (1817), 34; *Dict.* xviii. 459.—LESS. *Syn.* 118.—DC. *Prodr.* vii. 15.—ENDL. *Gen.* n. 2905.—B. H. *Gen.* ii. 497, n. 695.—*Perdicium* L. (part.).—LAG. *Amœn. nat.* i. 39.—DC. *Prodr.* vii. 38.—ENDL. *Gen.* n. 2932.—*Pardisium* BURM. *Fl. cap.* 26.—*Idicium* NECK. *Elem.* i. 28.—*Oreoseris* DC. *Prodr.* vii. 17.—*Chaptalia* ROYLE, *Ill. himal.* t. 59, fig. 2.—? *Aphyllocaulon* LAG. *Amœn. nat.* i. 38.—*Lasiopus* CASS. *Bull. Soc. philom.* (1817), 152; *Dict.* xxv. 298.—DC. *Prodr.* vii. 18 (not DON).—ENDL. *Gen.* n. 2907.—*Cleistanthium* KZE, *Bot. Zeit.* (1851), 350.

[8] White, yellow, reddish or sometimes violet.

5-nerved, glabrous or variously hairy; pappus hairs ∞, 2-∞, seriate, smooth, scabrous or barbellate, very rarely plumose.—Herbs, sometimes frutescent; leaves alternate, rosulate at base, entire, sinuate, dentate, lyrate or pinnatifid, generally hoary beneath, tomentose or lanate, rarely glabrous on both sides; capitules solitary at top of very short or subnil scape or more rarely in loose cymes.[1] (*Both Americas, warm and temp. Asia and Africa, Australia.*[2])

32. **Lycoseris** CASS.[3]—Flowers[4] diœcious, 2-morphous; the

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[1] Sections of this genus in our view are:

Anandria SIEGESB. *L. Amœn.* i. 161.—LESS. *Syn.* 120.—ENDL. *Gen.* n. 2933.—? *Atasites* NECK. *Elem.* i. 7.—*Leibnitzia* CASS. *Dict. sc. nat.* xxv. 420: radial flowers 0; capitules 2-morphous; the vernal radiate; the summer larger, homogamous; corollas of the latter narrow, sometimes scarcely irregular; stamens in radial flowers vanishing, in discal sometimes rudimentary. A Siberian plant.

Berniera DC. *Prodr.* vii. 18.—DELESS. *Ic. sel.* iv. t. 77.—ENDL. *Gen.* n. 2929^{6}: capitules, from absence of radial flowers, homogamous, leaves long-petiolate, sagittate cordate at base. A Nepalese plant.

Chaptalia VENT. *Jard. Cels*, t. 61.—DC. *Prodr.* vii. 41.—ENDL. *Gen.* n. 2934.—PAYER, *Fam. nat.* 26.—B. H. *Gen.* ii. 498, n. 696.—*Lieberkuhnia* CASS. *Dict.* xxvi. 286.—DC. *Prodr.* vii. 43.—ENDL. *Gen.* n. 2936.—*Leria* DC. *Ann. Mus.* xix. 68; *Prodr.* vii. 42.—ENDL. *Gen.* n. 2935.—? *Thyrsanthema* NECK. *Elem.* i. 6.—*Oxydon* LESS. *Linnæa*, v. 357; *Syn.* 122.—DC. *Prodr.* vii. 43.—ENDL. *Gen.* n. 2937: leaves entire, dentate or lyrate; scape 1-headed nearly bare; radial corollas often ligulate. American plants.

Loxodon CASS. *Dict.* xxvii. 253.—DC. *Prodr.* vii. 44.—ENDL. *Gen.* n. 2938: capitules very shortly or scarcely stipitate; corollas polymorphous; anterior lip ligulate generally subentire. Plants of extratrop. S. America.

Trichocline CASS. *Bull. Soc. philom.* (1817); *Dict. sc. nat.* lv. 215.—LESS. *Syn.* 117.—DC. *Prodr.* vii. 20.—ENDL. *Gen.* n. 2923.—B. H. *Gen.* ii. 496, n. 694.—*Ingenhusia* VELL. *Fl. flum.* 351.—*Ingenhouzia* VELL. *op. cit.* Atl. viii. t. 93.—*Bichenia* DON, *Trans. Linn. Soc.* xvi. 236.—DC. *Prodr.* vii. 29.—*Amblisperma* BENTH. *Hueg. Enum.* 67.—ENDL. *Gen.* n. 2924: leaves rosulate; capitules solitary stipitate heterogamous; radial flowers female; ligules (oftener large) thinly ∞-nerved; receptacle bare or fringed. Plants of S. America and Australia.

Onoseris DC. *Ann. Mus.* xix. 65, t. 12; *Prodr.* vii. 34 (part.).—ENDL. *Gen.* n. 2925.—B. H. *Gen.* ii. 486, n. 665.—*Seris* W. *Ges. Naturf. Berl. Mag.* (1807), 139 (not LESS.).—*Isotypus* H. B. K. *Nov. gen. et spec.* iv. 11, t. 307.—DC. *Prodr.* vii. 33.—ENDL. *Gen.* n. 2926.—*Rhodoseris* TURCZ. *Bull. Mosc.* (1851), ii. 94, t. 2.—*Caloseris* BENTH. *Pl. Hartweg.* 88.—*Schætzellia* KL. *Ott. et Dietr. Gartenz.* (1849), 81.—*Hipposeris* CASS. *Op. phyt.* ii. 97.—*Cursonia* NUTT. *Trans. Amer. Phil. Soc.* ser. 2, vii. 422.—*Centroclinium* DON, *Trans. Linn. Soc.* xvi. 254.—*Chætachlæna* DON, *loc. cit.* 256.—? *Urmenetea* PHIL. *Fl. atacam.* 26, t. 3.—B. H. *Gen.* ii. 487, n. 666: flowers all fertile; radial female, 1-seriate (sometimes 0); discal hermaphrodite; radial corollas 2-labiate; pappus hairs various, 2-∞-seriate; stem herbaceous or shrubby, sometimes subnil; capitules solitary or loosely cymose. Plants of trop. and extratrop. S. or Andine America.

Macrachænium HOOK. F. *Fl. antarct.* ii. 321.—B. H. *Gen.* ii. 498, n. 697: leaves pinnatifid soft, tomentose beneath; capitules solitary, long-stipitate; pappus hairs plumose; corollas 1-morphous. A Magellanic plant.

[2] Spec. about 70. LAMK, *Ill.* t. 679, fig. 3 (*Doronicum*).—H. B. K. *Nov. gen. et sp.* iv. t. 303 (*Chaptalia*), 304, 305 (*Onoseris*), 306 (*Hipposeris*).—WEDD. *Chlor. andin.* i. 8 (*Onoseris*).—BENTH. *Fl. austral.* iii. 676 (*Amblysperma*).—HARV. and SOND. *Fl. cap.* iii. 519, 523 (*Perdicium*).—FR. et SAV. *Enum. pl. jap.* i. 263.—REMY, *C. Gay Fl. chil.* iii. 285 (*Trichocline*), 328 (*Loxodon*), 403 (*Macrachænium*).—SM. *Icon. ined.* t. 65 (*Atractylis*).—*Bot. Mag.* t. 3114 (*Centroclinium*).—WALP. *Rep.* ii. 679 (*Centroclinium*), 680 (*Trichocline*); vi. 313, 315, 318 (*Onoseris*), 320 (*Chaptalia, Cursonia*); *Ann.* ii. 949 (*Schætzelia*).

[3] *Dict.* xxxiii. 474; *Op. phyt.* ii. 96, 112 (part.).—DC. *Prodr.* vii. 22.—ENDL. *Gen.* n. 2910.—B. H. *Gen.* ii. 495, n. 691.—*Diazeuxis* DON, *Trans. Linn. Soc.* xvi. 251.—*Langsdorffia* W. (from D ., not LEANDR., nor MART., nor RADD.).

[4] "Purple."

radial female; the discal hermaphrodite (all in male capitules sterile). Radial corollas in male capitules ligulate, 2–3-dentate; in female 2-labiate; posterior lip small entire or 2-lobed; discal corollas tubular, in male capitules 2-labiate or subregular; in female capitules shortly and thinly tubular; limb small subregular or irregular. Anthers long caudate at base (in female capitules sterile). Style in female capitules filiform; lobes short; in male capitules undivided. Fruit oblong glabrous, 5-costate or ∞-striate; pappus hairs numerous, ∞-seriate (in male capitule fewer), smooth or scabrous.—Erect or twining shrubs; leaves alternate, entire or denticulate, hoary tomentose beneath, penninerved or 3–5-plinerved,[1] sessile or petiolate; capitules terminal solitary or few-cymose, pedunculate or subsessile, often nutant; males smaller; bracts of globular or subcampanulate involucre imbricate, ∞-seriate, acute or acuminate; apex erect or reflexed; receptacle flat fringed. (*Central and trop. S. America.*[2])

33? **Cnicothamnus** Griseb.[3]—Flowers[4] hermaphrodite fertile, 2-morphous; radial corollas 2-labiate; discal subregular; lobes of limb slightly oblique linear, at apex uncinately revolute. Anthers 2-setose at base. Style exserted; lobes 2 very short rather obtusely oblong. Fruit densely villose compressed striated; pappus hairs rather scabrous, ∞-seriate.—A tall shrub, leafy to the capitules; leaves alternate oval crenately denticulate, 1-nerved, not hoary beneath; capitules terminal solitary sessile; involucral bracts imbricate, ∞-seriate, dilated at apex in a mucronulate-rotundate lacerate and denticulate appendage; receptacle flat, short-hairy.[5] (*Argentine Republic.*[6])

34. **Pachylæna** Don.[7]—Flowers[8] fertile, 2-morphous; the radial female, 1-seriate; the discal hermaphrodite. Corollas 2-labiate; lobes of posterior lip 2, revolute; anterior in radial flowers long-ligulate. Anthers long-caudate, in radial flowers rudimentary or sterile. Fruit oblong, glabrous, 5-costate; pappus

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[1] Sometimes, from mode of nervation, nearly of *Melastomaceæ*.

[2] Spec. 8–10. Sm. *Ic. ined.* t. 66 (*Atractylis*). —Pœpp. et Endl. *Nov. gen. et spec.* iii. t. 259 (*Centroclinium*).—Walp. *Rep.* vi. 317; *Ann.* v. 311.

[3] *Pl. Lorentz.* 148; *Symb. Fl. argent.* 211.

[4] "Purple."

[5] A genus (unknown to us) perhaps better considered a sect. of *Cnicothamnus*.

[6] Spec. 1. *C. Lorentzii* Griseb.

[7] *Hook. Comp. Bot. Mag.* i. 106.—Endl. *Gen.* n. 2922.—B. H. *Gen.* ii. 495, n. 690.—*Chionoptera* DC. *Prodr.* vii. 14.—Endl. *Gen.* n. 2929^{2}.

[8] Yellow.

hairs ∞, 2–3-seriate, very plumose. A low glabrous herb; leaves rosulate, alternate, at base narrowed to a flat subalate petiole, unequally denticulate; capitule (large) shortly stipitate; bracts of subcampanulate involucre, ∞-seriate; the lowest gradually shorter; receptacle flat and bare.[1] (*Chili.*[2])

35. **Oldenburgia** Less.[3]—Flowers[4] hermaphrodite fertile, 1-morphous; interior lip of thin 2-labiate corolla smaller, 2-partite. Anthers long-caudate. Style thickened to apex and there very shortly 2-lobed. Fruit oblong sericeous; pappus hairs ∞, unequal rigid shortly plumose.—Small or undershrubs lanate; stem thick simple or with very many short branches; leaves alternate, subdistichous or crowded, thick entire; capitules (very large) solitary or few (2, 3) cymose,[5] sessile among the uppermost leaves; involucral bracts ∞, lanate, imbricate, obtuse or acuminate; receptacle flat and bare. (*South Africa.*[6])

36? **Catamixis** Thoms.[7]—Flowers[8] fertile hermaphrodite, 1-morphous; limb of ligulate corolla open, 5-dentate. Anthers long-caudate at base. Style slender, obtuse 2-fid at apex; branches erect. Fruit obconical sericeous.—A glabrous or canescent undershrub;[9] leaves alternate crenate petiolate; capitules in a full corymbiform terminal cyme; bracts of oblong few-flowered involucre acute, imbricate; receptacle small and bare.[1] (*Himalaya.*[11])

37. **Nassauvia** Commers.[12]—Flowers[13] hermaphrodite fertile,

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[1] Better perhaps a sect. of *Gerbera*, pappus hairs (as in *Macrachænium*) plumose.

[2] Spec. 1. Deless. *Ic. sel.* iv. t. 75 (*Chionoptera*).—Remy, *C. Gay Fl. chil.* iii. 283.—Wedd. *Chlor. andin.* i. 23, t. 6.

[3] *Linnæa*, v. 252, t. 3, fig. 69–75; *Syn.* 99.—DC. *Prodr.* vii. 12; *Mém. Comp.* t. 12.—Endl. *Gen.* n. 2927.—B. H. *Gen.* ii. 494, n. 689.—*Scytala* E. Mey. *hb. Drège* (ex DC.).

[4] Purplish.

[5] In *O. grandi* (*O. Arbuscula* DC.—*Arnica grandi* Thunb.).

[6] Spec. 3. Thunb. *Fl. cap.* 668 (*Arnica*).—Harv. and Sond. *Fl. cap.* iii. 512.

[7] *Journ. Linn. Soc.* ix. (1867), 342, t. 4.—B. H. *Gen.* ii. 494, n. 688.

[8] "Yellow?"

[9] "Habit and appearance of *Baccharis*."

[10] To *Cichoriea*? "Characters of anthers, style and fruit rather of *Mutisieæ*."

[11] Spec. 1. *C. baccharoides* Thoms.

[12] Ex J. *Gen.* 175.—Lamk, *Ill.* t. 721.—DC. *Mém. Comp.* t. 14; *Prodr.* vii. 48.—Cass. *Op. phyt.* ii. 176.—Less. *Syn.* 399.—Payer, *Fam. nat.* 22.—B. H. *Gen.* ii. 502, n. 706.—*Nassovia* Pers. *Enchir.* ii. 499.—*Nassavia* Endl. *Gen.* n. 2944.—*Mastigophorus* Cass. *Op. phyt.* ii 178; *Ann. sc. nat.* ser. 1, v. 103.—Endl. *Gen.* n. 2945.—*Triachne* Cass. *Bull. Soc. philom.* (1817), 11; (1818), 48; *Dict. sc. nat.* lv. 181.—Endl. *Gen.* n. 2946.—*Panargyrus* Less. *Syn.* 397 (not Hook. and Arn.).—*Panargyrum* Lag. *Amen. nat.* i. 33.—Endl. *Gen.* n. 2948.—*Caloptilium* Lag. *loc. cit.* 34.—*Sphærocephalus* Lag. ex DC. *Prodr.* vii. 52.—*Portalesia* Meyen, *Reis.* i. 316.—*Pentanthus* Less. *Syn.* 397 (not Hook. and Arn.).—*Calopappus* Meyen, *Reis.* i. 315.—DC. *Prodr.* vii. 28.—Deless. *Ic. sel.* iv. t. 79.—*Strongyloma* DC. *Prodr.* vii. 52.—*Acanthophyllum* Hook. and Arn. *Comp. Bot. Mag.* i. 37.

[13] Whitish, yellowish or bluish.

1-morphous; anterior lip of 2-labiate corolla entire or 3-dentate; posterior entire or 2-fid, finally revolute. Stamens inserted in tube of corolla; anthers apiculate, rather long-caudate at base; connective abruptly thickened to base. Style branches linear or compressed, at apex truncate or thickened to a short cone, finally much revolute. Fruit obovoid, obconical or oblong; pappus hairs (sometimes few) linear or paleaceous rigid, entire, ciliate or plumose, persistent or caducous.—Undershrubs or more rarely herbs, spreading or cæspitose, more rarely erect, glabrous or villose; leaves alternate imbricate, rigid, subentire or ciliate or serrulate, sometimes spinose-dentate or short-pinnatifid; capitules compound and consisting of dense (few-flowered) glomerules, in a contracted or sometimes corymbiform mass; involucral bracts acute or spinescent; the exterior often shorter or leaf-like; receptacles of glomerules small and bare.[1] (*Extratrop. and Andine S. America.*[2])

38. **Moscharia** R. and Pav.[3]—Flowers[4] hermaphrodite, 2-morphous; the exterior fertile sub-1-seriate; the rest sterile; lips of corolla 2 very unequal; anterior lip ligulate, 3-dentate, shorter in interior flowers; the posterior small narrower entire, 2-dentate or 2-fid revolute. Anthers thinly caudate at base. Style thickened at base; branches linear reflexed, thinly papillose at truncate apex. Fruit oblong; the exterior incurved; the younger hairy; pappus hairs ∞, short, sub-1-seriate, shortly plumose.—An annual branched herb, glabrous or sparsely pubescent; leaves alternate pinnatifid; petiole dilated at base; capitules at top of twigs loosely cymose; bracts of subglobular involucre few foliaceous, imbricate; receptacle small convex; paleæ subtending flowers; the interior narrow; the exterior broad herbaceous complicately carinate and surrounding the fruit. (*Chili.*[5])

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[1] We make a sect. of this genus, *Triptilion* R. et Pav. *Prodr. Fl. per.* 102, t. 22.—DC. *Prodr.* vii. 51.—Deless. *Ic. sel.* iv. t. 83.—Endl. *Gen.* n. 2947.—B. H. *Gen.* ii. 503, n. 707: pappus pales few (4–6); stem thin or rigid; leaves remote, ciliate or spinescent; capitules in corymbiform cymes not sessile. A Chilian plant.

[2] Spec. about 30. Pœpp. et Endl. *Nov. gen. et spec.* t. 20–22.—Ad. Br. *Voy. Coq. Bot.* t. 56.—Remy, *C. Gay Fl. chil.* iii. 340, 348 (*Mastigophorus*), 350 (*Triachne*), 352, t. 39 (*Triptilion*), 359 (*Strongyloma*), 362, t. 41 (*Caloptilion*), 364 (*Portalesia*), 365 (*Panargyrum*).—Wedd. *Chl. andin.* i. 45, t. 11, 12.—Phil. *Linnæa*, xxviii. 714; xxxiii. 116 (*Triptilion*).—Hook. f. *F. antarct.* t. 114.—*Bot. Reg.* t. 853; (1841), t. 22 (*Triptilion*).—Walp. *Rep.* vi. 321, 322 (*Panargyrum*); *Ann.* i. 991 (*Calopappus*), 993, 994 (*Triptilion, Caloptilium*); v. 313.

[3] *Prodr. Fl. per.* 103 (not Forsk. nor Heist.).—Less. *Syn.* 417.—DC. *Prodr.* vii. 72.—Endl. *Gen.* n. 2955.—B. H. *Gen.* ii. 503, n. 708.—H. Bn, *Bull. Soc. Linn. Par.* 280.—*Moscaria* Pers. *Enchir.* ii. 379.—*Mosigia* Spreng. *Syst.* iii. 366.—*Gastrocarpha* Don, *Trans. Linn. Soc.* xvi. 231.

[4] Pink.

[5] Spec. 1. *M. pinnatifida* R. et Pav. *Syst.*

39. **Pamphalea** Lag.[1]—Flowers[2] hermaphrodite fertile, 1-morphous; lips of corolla short entire or dentate; the anterior larger patulous ligulate; the posterior smaller revolute. Anthers thinly caudate below. Style branches narrow truncate.—Annual or perennial herbs; caudex tuberous subterraneous; leaves on slender branches alternate, entire, dentate or lobed, sometimes cordate or auriculate at base; capitules (small) in loose cymes, long and slenderly stipitate; bracts of subcampanulate involucre 1–2-seriate unequal, acute or obtuse at apex, sometimes unequally 3-dentate, oftener scarious at margin; receptacle narrow flat foveolate. (*Extratrop. S. America.*[3])

40. **Cephalopappus** Nees and Mart.[4]—Flowers[5] hermaphrodite fertile, 1-morphous; lips of corolla unequal; anterior suberect, 3-dentate; posterior revolute, 2-partite. Anthers aristate-caudate at base. Style branches obtuse. Fruit narrow, ∞-costate below, at apex crowned with a short ring, no pappus.—A perennial nearly stemless herb; rhizome densely lanate to neck; leaves basilar (full) acutely dentate, attenuated to a cuneate-alate petiole, glabrous above, beneath woolly to the nerves; capitules (small) solitary or few (2, 3) at the top of a thin leafless lanate scape; bracts of hemispherical involucre imbricate obtuse unequal sub-3-seriate; receptacle hemispherical bare.[6] (*Brazil.*[7])

41. **Trixis** P. Br.[8]—Flowers[9] hermaphrodite fertile, 1-morphous; lips of corolla unequal; the anterior 3-dentate, in exterior flowers oftener longer; the posterior 2-fid or 2-partite. Anthers long-caudate at base. Style branches dilated above, penicillate at truncate apex. Fruit oblong subterete, 5-costate, attenuated

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i. 136.—Lindl. *Bot. Reg.* t. 1564.—Remy, *C. Gay Fl. chil.* iii. 429.—*Mosigia pinnatifida* Spreng.—*Gastrocarpha runcinata* Don, *Sweet Brit. fl. Gard.* t. 229.

[1] *Amen. nat.* i. 34 (*Panphalea*).—DC. *Prodr.* vii. 73.—Cass. *Bull. Soc. philom.* (1819), 111.—Less. *Syn.* 6.—Endl. *Gen.* n. 2950.—B. H. *Gen.* ii. 503, n. 709.—*Ceratòlepis* Cass. (ex Endl.).

[2] White.

[3] Spec. 4, 5. Less. *Linnæa* (1830), 9.—Cass. *Dict. sc. nat.* xxxvii. 345.—Field, *Sert. plant.* t. 21.—Walp. *Rep.* vi. 325.

[4] *Nov. Acta nat. cur.* xii. 5, t. 1.—Less. *Syn.* 401.—DC. *Prodr.* vii. 73.—Endl. *Gen.* n. 2951.—B. H. *Gen.* ii. 504, n. 710.

[5] "Fulvous."

[6] Char. from descrip. and figure of Neesius.

[7] Spec. 1. *C. sonchifolius* Nees et Mart.—*Sparganophorus sonchifolius* Spreng. *Syst.* iii. 458

[8] *Jam.* 312.—Lag. *Amen. nat.* i. 35.—DC. *Ann. Mus.* xix. 66; *Prodr.* vii. 67.—Less. *Syn.* 413.—Endl. *Gen.* n. 2960.—B. H. *Gen.* ii. 501, n. 704.—*Perdicium* L. *Gen.* n. 960 (part.). *Castra* Vell. *Fl. flum.* 242; *Atl.* viii. t. 81, 82.—*Dolichlasium* Lag. *loc. cit.* 33.—DC. *Prodr.* vii. 72.—Endl. *Gen.* n. 2961.—*Tenorea* Coll. *Hort. rip.* 137.—*Prionanthes* Schr. *Pl. rar Hort. monac.* ii. t. 51.—*Bowmannia* Gardn. *Hook. Icon.* 519.

[9] White, purple or yellow.

above to a neck or beak sometimes papillose; pappus hairs 1–3-seriate, scabrous, denticulate or barbellate-plumose.—Herbs or shrubs, sometimes climbing; indumentum various; leaves alternate, sometimes decurrent, linear, ovate-lanceolate, orbiculate or caudate, entire, dentate or lobed; capitules terminal solitary or oftener in compound corymbiform cymes; the exterior often few smaller; receptacle bare, fringed, pilose or rather stiffly paleaceous.[1] (*Warm trop. and extratrop. N. and S. America.*[2])

42? **Clybatis** Phil.[3]—Flowers[4] (nearly of *Trixis*) fertile; corolla 2-labiate. Fruit papillose; pappus hairs 18–20, 1-seriate, plumose.—Perennial herbs; stem simple arachnoid velutinous; leaves few spathulate incised-dentate; the upper ones entire; capitule solitary terminal; bracts of hemispherical involucre about 12, herbaceous flat; receptacle flat bare.[5] (*Araucania.*)

43. **Perezia** Lag.[6]—Flowers[7] hermaphrodite fertile, 1–2-morphous; anterior lip of 2-labiate corolla nearly like posterior or in radial flowers larger ligulate, 3-dentate; posterior subequal or oftener narrower, 2-fid or 2-dentate revolute. Anthers long-caudate at base. Style branches compressed, finally recurved, truncate or more rarely rounded at papillose apex. Fruit oblong or obconical, terete or 5-angulate; pappus hairs numerous thin, scabrous or denticulate above or all over.—Herbs or shrubs, erect

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[1] Sect. of this genus are:

Cleanthes Don, *Trans. Linn. Soc.* xvi. 194.—Griseb. *Symb. Fl. argent.* 216.—*Platycheilus* Cass. *Op. phyt.* ii. 153, 162; *Dict.* xxxiv. 212.—*Holocheilus* Cass. *Bull. Soc. philom.* (1818), 73; *Dict.* xxi. 306: branches herbaceous; leaves nearly all rosulate, on the branches few and loose; involucral bracts sub-1-seriate; style branches cylindrical, subglobose-truncate at apex. From Brazil and Argentine Rep.

Jungia L. f. *Suppl.* 58.—Less. *Syn.* 407.—DC. *Prodr.* vii. 55.—Endl. *Gen.* n. 2954.—B. H. *Gen.* ii. 502, n. 705.—*Trinacte* Gærtn. *Fruct.* ii. 415.—*Martrasia* Lag. *Amen. nat.* i. 36.—*Rhinactina* W. *Ges. Nat. Fr. Berl.* (1807), 139.—*Dumerilia* Lag. ex DC. *Ann. Mus.* xix. 71, t. 15, 16: stem erect or climbing; receptacle paleaceous; pappus sometimes barbellate or plumose.

Pleocarphus Don, *Trans. Linn. Soc.* xvi. 228. DC. *Prodr.* vii. 72.—Endl. *Gen.* n. 2952: leaves linear rugose; branches capituliferous racemiform; pappus hairs crowded thin serrulate. Chili.

[2] Spec. about 40. H. B. K. *Nov. gen. et spec.* iv. t. 355 (*Perdicium*).—Hook. and Arn. *Beech. Voy. Bot.* t. 65.—Hook. *Ex. Fl.* t. 101.—A. Gray, *Proc. Amer. Acad.* v. 144 (*Jungia*).—Remy, *C. Gay Fl. chil.* iii. 374 (*Jungia*), 423, 426, t. 43 (*Pleocarphus*).—Griseb. *Symb. Fl. argent.* 215 (*Jungia*).—*Bot. Mag.* t. 2765.—Walp. *Rep.* ii. 682; vi. 323 (*Bowmannia*); *Ann.* i. 459; v. 313 (*Jungia*), 314.

[3] *Descr. nuev. pl.* (1872), 84.—B. H. *Gen.* ii. 1237, n. 704 *a.*

[4] "Yellow."

[5] Perhaps only a sect. of *Trixis* with epaleaceous receptacle and plumose pappus.

[6] *Amen. nat.* i. 31.—DC. *Prodr.* vii. 60.—Endl. *Gen.* n. 2962.—B. H. *Gen.* ii. 500, n. 702.—*Clarionea* Lag. ex DC. *Ann. Mus.* xix. 65 (not Naud.).—*Acourtia* Don, *Trans. Linn. Soc.* xvi. 203.—DC. *Prodr.* vii. 65.—Deless. *Ic. sel.* iv. t. 95.—*Homoianthus* DC. *Ann. Mus.* xix. 65; *Prodr.* vii. 63.—*Homanthis* H. B. K. *Nov. gen. et spec.* iv. 12.—*Drozia* Cass. *Dict.* xxiv. 217.—*Scolymanthus* W. (ex DC.).—*Dumerilia* Less. *Linnæa*, v. 13; *Syn.* 407 (not Lag.).—DC. *Mém.* t. 17; *Prodr.* vii. 66.—Endl. *Gen.* n. 2959.—? *Pogonura* DC. *Lindl. Introd.* ed. 2, 263 (ex B. H.).

[7] White, pink or bluish.

or climbing, sometimes spinescent, glabrous, glandular or lanate; leaves alternate, sometimes basilar rosulate, entire, dentate or spinose, pinnatifid or dissected; capitules solitary or in more or less compound cymiferous racemes; bracts of ovoid obconical or subcampanulate involucre ∞, unequal, acute or obtuse, imbricate; receptacle nearly flat, bare, fimbrilliferous or pilose.[1] (*Trop. and subtrop. N. and S. America.*[2])

44 (?) **Hecastocleis** A. Gray.[3]—**Capitules 1-flowered; flowers hermaphrodite. Involucre cylindrical few-seriate; receptacle bare. Corolla tubular subcoriaceous. Anthers caudate at base. Fruit cylindrical; pappus coroniform laciniate horny.—A glabrous branched shrub; leaves alternate and fasciculate in axils, mucronate, occasionally spinous at margin; the floral supporting the glomerate sessile capitules.**[4] (*Nevada.*)

45 ? **Hyaloseris** Griseb.[5]—Flowers[6] hermaphrodite, 1-morphous; blade of 1-labiate corolla open equally 5-dentate. Anthers at base long-ciliolately setose. Style short exserted; branches filiform, rounded at apex, very shortly puberulous. Fruit subcompressed 10-costate; pappus hairs ∞, unequal simple.—Unarmed shrubs; branches divaricately rigid; leaves alternate (small) entire, short-petiolate; capitules 5-flowered in short terminal ramules; scales of oblong-turbinate involucre scarious adpressed, unequal, imbricate; the interior longer; receptacle small bare.[7] (*Argentine Rep.*[8])

46 ? **Dinoseris** Griseb.[9]—Flowers[10] hermaphrodite, 1-morphous; corolla 1-labiate, passing from tubular base to a somewhat erect blade, minutely 5-dentate at apex. Anthers at base long puberulous-setose. Styles exserted, thickened at base, branches elongate

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[1] A sect. of this genus, notwithstanding its habit, is *Proustia*]Lag. *Amen.* i. 33.—DC. *Ann. Mus.* xix. t. 4; *Prodr.* vii. 27.—Cass. *Dict. sc. nat.* lv. 395.—Endl. *Gen.* n. 2918.—B. H. *Gen.* ii. 500, n. 701: style branches rotundate (not truncate) at apex; capitules oftener few- (3–5) flowered; stem shrubby or sometimes climbing.

[2] Spec. about 50. H. B. *Pl. æquin.* t. 17, 135, 136 (*Chætanthera*).—Deless. *Ic. sel.* iv. t. 92, 93 (*Clarionea*), 94.—Hombr. et Jacquin. *D' Urv. Voy. pôle sud Bot.* t. 10 (*Homoianthus, Clarionea*).—Hook. f. *Fl. antarct.* t. 111 (*Clarionea*).—Remy, *C. Gay Fl. chil.* iii. 293 (*Proustia*), 404 (*Clarionea*), 411, 416 (*Homoianthus*).—Wedd. *Chlor. andin.* i. 23, t. 5 (*Proustia*); 36, t. 10.—Phil. *Linnæa*, xxviii. 717 (*Clarionea*),; xxix. 109; xxxiii. 114 (*Proustia*), 124 (*Homoianthus, Clarionea*); *Fl. atacam.* 28 (*Proustia*).—A. Gray *Emor. Exp. Bot.* 104.—*Bot. Mag.* t. 5401 (*Homoianthus*), 5489 (*Proustia*).—Walp. *Ann.* i. 996; ii. 949; v. 316.

[3] *Proc. Amer. Acad.* xvii. 220.

[4] Spec. 1. *H. Schockleyi* A. Gray.

[5] *Symb. Fl. argent.* 212.

[6] "Dry pale."

[7] A genus "perhaps allied to *Dendroseris*, in habit closely resembling *Hyalis*" (Griseb.), approaching the *Cichorieæ* by its ligulate flowers.

[8] Spec. 1. *H. cinerea* Griseb.

[9] Griseb. *Symb. Fl. argent.* 213.

[10] "Pale yellow."

revolute, puberulous at acute apex. Fruit glabrous, 5-costate; pappus hairs ∞, rather stiff and scabrous.—A small tree or shrub[1] glabrous unarmed; leaves opposite petiolate denticulate; capitules terminal solitary; bracts of ovoid involucre imbricate, ∞-seriate, rigidly scarious; the exterior rounded, finally patulous; *receptacle rather flat bare.*[2] (*Argentine Rep.*[3])

47? **Leunisia** PHIL.[4]—Flowers[5] hermaphrodite, 1-morphous; lips of 2-labiate corolla equal; the anterior 3-dentate; the posterior 3-partite.[6] Anthers at base long-plumose-caudate. Style branches rather long, at apex truncate glabrous. Fruit (immature) cylindrical glandular; pappus hairs ∞, hispid, 1-seriate.—A viscous pubescent shrub; branches densely leaved; leaves sessile ovate-oblong acuminate, entire or 1–2-dentate on both sides; capitules solitary at top of thickened peduncle; bracts of ovate-cylindrical involucre[7] herbaceous equal long-acuminate; the interior narrower; receptacle flat bare. (*Chili.*[8])

48? **Oxyphyllum** PHIL.[9]—Flowers[10] hermaphrodite fertile, 1-morphous; anterior lip of 2-labiate corolla rather broad (entire?) deflexed; posterior narrow revolute (2-dentate?). Anthers long-caudate at base. Style branches long, truncate at apex. Fruit densely arachnoid villose; pappus hairs plumose.—A glabrous branched shrub; leaves crowded narrow, entire or sinuate-dentate; apex and teeth pointed; capitules closely corymbose to ends of branches; bracts of cylindrical-campanulate involucre imbricate, ∞-seriate, herbaceous; the inmost enfolding the outer flowers; the outermost gradually smaller; receptacle convex bare. (*Chili.*[11])

49. **Leuceria** LAG.[12]—Flowers[13] hermaphrodite fertile, 1–2-morphous; anterior lip of 2-labiate corolla 2–3-dentate, in radial flowers (1-seriate) sometimes larger ligulate; posterior small revolute, 2-fid or subentire. Anthers linear-caudate at base.

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[1] "12–15-foot."

[2] A genus "in habit closely allied to *Hyaloseris*, leaves opposite, involucre nearly of *Centaurea*, distinguished by structure of style" (GRISEB.).

[3] Spec. 1. *D. salicifolia* GRISEB.

[4] *Linnæa*, xxxiii. 120.—B. H. *Gen.* ii. 501, n. 703.

[5] "Yellow; pappus white."

[6] "Erroneously for 2-partite." (B. H.)

[7] "Nearly an inch."

[8] Spec. 1. *L. læta* PHIL.

[9] *Fl. atacam.* 28, t. 4, A.—B. H. *Gen.* ii. 499, n. 699.

[10] "Pale violet."

[11] Spec. 1. *O. ulicinum* PHIL.

[12] *Amen. nat.* 32 (*Leucheria*).—DC. *Prodr.* vii. 56; *Ann. Mus.* xix. 66.—ENDL. *Gen.* n. 2956.—B. H. *Gen.* ii. 499, n. 698.—*Leuchæria* LESS. *Syn.* 401.—*Chabræa* DC. *Ann. Mus.* xix. 65; *Prodr.* vii. 58.—*Lasiorrhiza* LAG. *Amen. nat.* i. 32.—ENDL. *Gen.* n. 2957.—*Ptilurus* DON, *Trans. Linn. Soc.* xvi. 218.—DC. *Prodr.* vii. 56.—ENDL. *Gen.* n. 2958.—*Cassiopea* DON, *Trans. Linn. Soc.* xvi. 215.—*Eizaguirrea* REMY, *C. Gay Fl. chil.* iii. 401.

[13] White, azure or purple.

Style branches at rather compressed apex truncate or slightly thickened recurved. Fruit obovoid or oblong, dotted with papillæ or transparent hairs; pappus hairs 1-seriate, oftener slender, serrulate, barbellate or oftener plumose, more or less connate at base.—Annual or perennial herbs, lanate or glandular; leaves alternate, sometimes rosulate at base, entire, or pinnately incised or dissected; capitules solitary or irregularly cymose, long- or more rarely shorter-stipitate; bracts of hemispherical or subcampanulate involucre 1–few-seriate; receptacle flat bare or paleaceous to the outer flowers. (*Extratrop. and Andine S. America.*[1])

50. **Chætanthera** R. and PAV.[2]—Flowers[3] 2-morphous; the radial female, 1-seriate, fertile or more rarely sterile; the discal hermaphrodite, fertile; corollas 2-labiate; anterior lip elongate ligulate open, 3-dentate at apex, in discal flowers oftener shorter and equal or nearly so to the posterior, 3-fid; posterior lip 2-dentate, 2-partite or subentire. Anthers at base long and thinly barbate-caudate. Style branches of hermaphrodite flower short generally dilated, and truncate or more rarely rounded at apex. Fruit oblong densely papillose; pappus hairs subequal, scabrous or barbellate, 1–2 or more rarely ∞-seriate.—Annual or perennial herbs, sometimes frutescent; leaves alternate or rarely opposite, narrow or linear, entire or ciliate-dentate; capitules terminal stipitate or sessile between the uppermost leaves; bracts of campanulate or obconical involucre ∞, narrow, unequal, ∞-seriately imbricate; the interior obtuse or scarious to apex; the exterior gradually smaller, sometimes foliaceous or foliaceous-appendiculate; receptacle flat, bare or foveolate.[4] (*Extratrop. and Andine S. America.*[5])

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[1] Spec. 20–25. DELESS. *Ic. sel.* iv. t. 85–91. —REMY, *C. Gay Fl. chil.* iii. 376, 389 (*Chabræa*). —HOOK. F. *Fl. antarct.* t. 111.—HOOK. *Icon.* t. 496.—HOMBR. et JACQUIN. *D'Urv. Voy. pôle sud Bot.* t. 4 (*Lasiorrhiza*).—PHIL. *Linnæa*, xxviii. 714, 719 (*Eizaguerra*), 715; *Fl. atacam.* 28.—WEDD. *Chl. andin.* i. 33, t. 10.—WALP. *Rep.* vi. 322; *Ann.* i. 994; ii. 949; v. 314.

[2] *Prodr. Fl. per. et chil.* 106, t. 23.—DC. *Ann. Mus.* xix. t. 3; *Prodr.* vii. 29.—POIR. *Suppl.* ii. 185.—B. H. *Gen.* ii. 496, n. 693.—*Elachia* DC. *Prodr.* vii. 256; *Deless. Ic. sel.* iv. t. 99.—ENDL. *Gen.* n. 3032[5].—*Cherina* CASS. *Dict.* viii. 437.—*Proselia* DON, *Trans. Linn. Soc.* xvi. 234.—*Tylloma* DON, *loc. cit.* 238.—DC. *Prodr.* vii. 32.—*Euthrixia* DON, *loc. cit.* 257.—*Oriastrum* PŒPP. et ENDL. *Nov. gen. et spec.* iii. 50, t. 257.—*Aldunatea* REMY, *C. Gay Fl. chil.* iii. 320, t. 38.—*Carmelita* C. GAY, *loc. cit.* t. 37; *DC. Prodr.* vii. 14.—*Egania* REMY, *loc. cit.* iii. 324.—*Chondrochilus* PHIL. *Fl. atacam.* 27, t. 3. —*Minythodes* PHIL. herb. (ex B. H.).

[3] Yellow.

[4] Of this genus, in our view, *Brachyclados* PHIL. *Phil. Mag.* (1832), 391.—B. H. *Gen.* ii. 495, n. 692, is a sect.; stem shrubby; leaves linear, revolute at margin; involucral bracts inappendiculate.

[5] Spec. about 25. DELESS. *Ic. sel.* iv. t. 80–82. —DON, *Trans. Linn. Soc.* xvi. 236 (*Richenia*), 259 (*Euthrixia*).—SWEET, *Brit. fl. Gard.* ser. 2, t. 214.—REMY, *C. Gay Fl. chil.* iii. 300, t. 35; 311 (*Brachyclados*), 313 (*Elachia*), 316, t. 35 (*Tylloma*), 319 (*Oriastrum*), 320, t. 38 (*Aldunatea*), 324, t. 36 (*Egania*).—WEDD. *Chlor. andin.* i. t. 6 (*Carmelita*), 8 (*Tylloma*), 9 (*Egania*,

51. **Barnadesia** Mut.[1]—Flowers[2] fertile, 1-morphous; capitules homogamous, rarely 1- or few-flowered (*Fulcaldea*[3]). Involucral bracts ∞, alternately imbricate, deeply ∞-seriate; the interior gradually larger much appressed; receptacle glabrous or pilose above. Corollas 2-labiate; outer lip ligulate, 4-dentate; inner filiform, curved or revolute, sometimes absent. Stamens 5; filaments free or coalite; anthers at base entire, ecaudate. Style 2-lobed or 5-dentate at apex; branches otherwise connate. Achenes villose; pappus various; hairs often plumose or formed of pluricellulose[4] lateral hairs.—Shrubs often spinescent; leaves alternate, entire, penninerved or 3-nerved, sometimes fasciculate, often few; capitules terminal, solitary or cymose. (*Trop. and sub-trop. S. America.*[5])

52. **Icma** Phil.[6]—Flowers 1-morphous (?); corollas subequal tubular; laciniæ 5, erect. Anthers ecaudate. Style branches rather long cylindrical. Fruit cylindrical glabrous, 10-costate; pappus hairs ∞, scabrous towards apex, ∞-seriate.—A glabrous branched undershrub; leaves small linear, 1–2-dentate on both sides; capitules corymbose pedunculate, at base surrounded by 3–5 leaves; bracts of turbinate involucre (nearly equal to flowers) cartilaginous obtuse, imbricate; the interior longer, ciliate above; receptacle flat fringed.[7] (*Mendoza.*)

53. **Schlechtendahlia** Less.[8]—Flowers hermaphrodite irregular, 1-morphous; ovary externally villose. Pappus pales ∞ (to 10), long-ovate-acute, at apex long acutate-paleaceous, transparent at margin, imbricate. Corolla in bud regular; lobes 5, unequal, valvate, rather thick; one longer and a little wider and richly fuscate-villose within. Stamens 5; filaments free; anthers

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Oriastrum).—Phil. *Linnæa*, xxviii. 712; xxxiii. 112 (*Tylloma*, *Aldunatea*).—A. Gray *Proc. Amer. Acad.* v. 144.—Walp. *Rep.* vi. 318, 319 (*Oriastrum*); *Ann.* i. 991, 992 (*Egania*).

[1] *L. f. Suppl.* 55.—Less. *Syn.* 94.—DC. *Prodr.* vii. 2.—Endl. *Gen.* n. 2901.—B. H. *Gen.* ii. 484, . 659.—*Bacazia* R. et Pav. *Prodr. Fl. per.* 105, t. 22.—*Rhodactinia* Gardn. *Hook. Lond. Journ.* vi. 449.

[2] Pink or purplish.

[3] Poir. *Dict.* Suppl. v. 375.—*Turpinia* H. B. *Pl. æquin.* i. 118, t. 33 (not Vent.).—*Dolichostylis* Cass. *Dict.* lvi. 139.—*Voigtia* Spreng. *Syst.* ii. 367 (not Roth, nor Kl.).

[4] Sometimes rachiform-nodose.

[5] Spec. about 10. H. B. K. *Pl. æquin.* t. 138. —Remy, *C. Gay Fl. chil.* iii. 260.—Wedd. *Chlor. andin.* i. 13, t. 1.—Lindl. *Bot. Reg.* (1843), t. 29.—*Bot. Mag.* t. 4232.—Walp. *Rep.* ii. 678; *Ann.* i. 455 (*Rhodactinea*).

[6] *Descr. nuev. plant.* (1872), 82.—B. H. *Gen.* ii. 1237, n. 659 *a*.

[7] A plant "anomalous among the *Mutisiaceæ* if anthers really ecaudate" (B. H.).

[8] *Linnæa*, v. 242; *Syn.* 93 (not W., nor Spreng.).—DC. *Prodr.* vii. 2.—Endl. *Gen.* n. 2899.—B. H. *Gen.* ii. 484, n. 658.—H. Bn, *Bull. Soc. Linn. Par.* 241.

minutely and obtusely auriculate at base, obtuse at apex. Stylus suddenly contracted at base and girt with epigynous disk, tubular to apex and obtusely 2-dentate. Achenes turbinate and slightly villose.—An erect perennial herb[1]; branches densely sericeous-villose; leaves erect linear-sword shaped, straight nerved; the lower crowded, imbricate; the upper in scape smaller opposite or 3-nate and connate in a sheath at the base; capitules (large) in terminal cymes; bracts of subcampanulate involucre ∞, imbricate rigid aristate; the lower shorter; receptacle obconical, flat above and densely villose between the flowers. (*East. extratrop. S. America.*[2])

54? **Pseudoseris** H. Bn.[3]—Flowers[4] hermaphrodite all (?) fertile, 2-morphous; radial corollas 1-seriate, 2-labiate; anterior lip ligulate, 3-dentate; the posterior consisting of 2 free, erect, linear or filiform laciniæ. Discal corollas less irregular; anterior lip smaller; posterior nearly equal to or scarcely dissimilar from anterior. Anthers linear-2-setose at base. Style erect, in radial flowers simple capitellate; in discal flowers obtuse shortly 2-lobed at apex. Fruit (immature) oblong, truncate at apex or beyond the short neck shortly cup-shaped; pappus hairs ∞, linear serrulate.—Densely lanate[5] (perennial?) herbs; leaves basal few entire; scapes erect 1-headed; involucral bracts few-seriate elongate acutate, unequal; the interior narrower subpaleaceous; receptacle foveolate.[6] (*Madagascar.*[7])

III. CICHORIEÆ.

55. **Cichorium** T.—Flowers irregular hermaphrodite fertile, 1-morphous; corolla ligulate, at truncate apex 5-dentate, valvate. Stamens 5; filaments free; anthers united in a tube, sagittate at base and produced in mucronate-acuminate or shortly setaceous-acuminate auricles. Ovary 1-celled; ovule subbasal ascending; raphe anterior; style branches thin rather obtuse. Fruit 5-angular or rather compressed, 4–8-costate or striate-∞-costate,

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[1] With the habit of narrow-leaved *Eryngia.*

[2] Spec. 1. *S. luzulæfolia* Less. *loc. cit.* 243, fig. 50-55.—Hook. and Arn. *Comp. Bot. Mag.* 110.

[3] *Bull. Soc. Linn. Par.* 281.

[4] "Copper-coloured."

[5] Wool reddish. Appearance sometimes of *Gerbera*, sometimes of some *Hieracia.*

[6] A genus connecting the *Mutisieæ* with the *Cichorieæ.* Stem sometimes very short, and leaves apparently (from Grandidier) inconspicuous.

[7] Spec. hitherto 2.

sometimes contracted at base, at apex truncate or crowned with a slightly prominent margin; paleæ of pappus ∞, sometimes minute or few, or 0, often paleaceous at dilated base, entire or 3-lobed.—Annual or perennial (lactescent) herbs, glabrous or hispid, sometimes spinescent (*Acanthophyton*); leaves alternate, sometimes rosulate at base, narrow, entire or oftener pinnatifid, coarsely dentate or lyrate; capitules either some sessile along the stem to axils of peduncles, others thickly or rigidly stipitate, or (*Krigia*, *Calais*, *Microseris*, *Phalacroseris*) terminal in 1-headed few-leaved or leafless scapes; bracts of oblong or subcampanulate involucre equal or unequal; the outermost shorter, imbricate, herbaceous or subcoriaceous; receptacle flat or slightly convex, bare or more rarely fringed. (*Temp. reg. of both worlds.*)—See p. 18.

56. **Hyoseris** L.[1]—Flowers[2] (nearly of *Cichorium*) ligulate; involucral bracts narrow herbaceous, finally thickly carinate or concave; fruit compressed, 2-alate or variously costate; paleæ of sessile pappus (sometimes 0) narrow aristate; the exterior thinner.—Herbs; leaves basal rosulate, entire, dentate or pinnatifid; capitules terminal at top of leafless, undivided or branched scape hollow perceptibly widened above.[3] (*Temp. and south. Europe, Medit. reg.*[4])

57 ? **Tolpis** Adans.[5]—Flowers[6] (nearly of *Cichorium*) 1-morphous; corolla ligulate, 5-dentate. Exterior involucral bracts patulous, narrow or short; interior erect. Fruit subterete, 5–8-costate; pappus hairs 2–10, rigid simple thin erect; often in addition small scales ∞, few or 0.—Branching herbs; leaves few, entire, dentate or pinnatifid; capitules in loose cymes or stipitate to long peduncle. Other characters of *Cichorium*. (*Medit. reg. Canary isles.*[7])

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[1] *Gen.* n. 916 (part.).—DC. *Prodr.* vii. 79.—Endl. *Gen.* n. 2974.—B. H. *Gen.* ii. 508, n. 722.—*Thlipsocarpus* Kze, *Flora* (1846), 695.

[2] Yellow.

[3] Sect. of this genus are:

Aposeris Neck. *Elem.* i. 57.—DC. *Prodr.* vii. 82.—Endl. *Gen.* n. 2975.—*Achyrastrum* Neck. *loc. cit.*: fruit epappose.

Arnoseris Gærtn. *Fruct.* ii. 355, t. 157.—DC. *Prodr.* vii. 79.—Endl. *Gen.* n. 2972.—B. H. *Gen.* ii. 507, n. 721: fruit 8–10-costate, epappose; bracts of involucre finally carinate.

[4] Spec. 4, 5. Jacq. *Hort. vindob.* t. 150.—W. et Kit. *Pl. hung. rar.* i. t. 49.—Reichb. *Ic. Fl. germ.* t. 1350, 1351 (*Arnoseris*), 1354 (*Aposeris*).—Boiss. *Fl. or.* iii. 707.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 208, 212 (*Arnoseris*), 213 (*Aposeris*).—Gren. et Godr. *Fl. de Fr.* ii. 289, 290 (*Arnoseris*), 291 (*Aposeris*).

[5] *Fam. des pl.* ii. 112.—Gærtn. *Fruct.* ii. 371, t. 160.—DC. *Prodr.* vii. 85.—Endl. *Gen.* n. 2979.—B. H. *Gen.* ii. 508, n. 723.—*Drepania* J. *Gen.* 169.—*Chatelania* Neck. *Elem.* i. 53.—*Schmidtia* Mœnch, *Meth.* Suppl. 217.—*Æthionia* Don, *Edinb. new Phil. Journ.* (1828–29), 309.—*Polychæta* Tausch, *Flora* (1828), *Erganzbl.* 81.—*Calodonta* Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 448.—*Swertia* Ludw. (of DC., not of others).

[6] Yellow or pale yellowish.

[7] Spec. about 10. Desf. *Act. Soc. Hist. nat. Par.* t. 8, 9 (*Crepis*).—Sibth. *Fl. græc.* t. 810.—Ten. *Fl. nap.* t. 186.—Bivon. *Tolpid.* t. 3.—Webb, *Phyt. canar.* t. 120-122.—Reichb. *Ic.*

58. **Catanance** T.[1]—Flowers[2] hermaphrodite 1-morphous; corollas ligulate, at truncate apex 5-dentate, valvate. Anthers at base mucronate-auriculate. Style suddenly contracted at base and girt with top of shortly conical epigynous disk; branches semiterete. Fruit oblong 5–10-costate, glabrous or setose; paleæ of pappus few (4–8), or more numerous membranous, transparent,[3] dentate or lacerate, acuminate.—Annual or perennial herbs, oftener puberulous or sericeous hoary; leaves alternate, generally crowded at base, linear, entire or few-dentate, sometimes pinnatifid; capitules long stipitate; bracts of subglobular or conoid involucre imbricate; the inmost mucronate; the exterior gradually smaller scarious-appendiculate, often rather fleshy at base; receptacle flat or foveolate, bare, setose or externally paleaceous.[4] (*Medit. reg.*[5])

59? **Hænselera** Boiss.[6]—Flowers[7] nearly of *Catanance*; involucral bracts obtuse, slightly or not scarious. Style branches linear rather obtuse. Fruit oblong glabrous, 5–10-costate; paleæ of pappus few (5, 6) rather broad, obtuse or oftener acute.—A glabrous perennial herb; leaves basal few pinnatifid erosely dentate; capitule solitary at top of bare or few-bracteate scape; receptacle flat or rigidly paleaceous between flowers.[8] (*Spain.*[9])

60. **Picris** L.[10]—Flowers[11] (nearly of *Cichorium*) 1-morphous; corollas ligulate; anthers acute at base or shortly setaceous-acuminate. Style branches thin. Fruit oblong linear, straight or

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Fl. germ. t. 1359.—Seub. *Fl. azor.* t. 11.—Jord. *Ic. Fl. eur.* t. 104–106.—Boiss. *Fl. or.* iii. 725.—Gren. et Godr. *Fl. de Fr.* ii. 287.—*Bot. Mag.* t. 35, 2988 (*Crepis*).—Walp. *Rep.* vi. 328; *Ann.* ii. 955.

[1] *Inst.* 478, t. 271.—*Catananche* L. *Gen.* n. 920.—L. *Gen.* n. 920.—Gærtn. *Fruct.* ii. 356, t. 157.—Less. *Syn.* 128.—DC. *Prodr.* vii. 84.—Endl. *Gen.* n. 2976.—B. H. *Gen.* ii. 505, n. 714.—H. Bn, *Bull. Soc. Linn. Par.* 262.—*Piptocephalum* Sch. bip. *Bonplandia* (1860), 369.

[2] Azure or yellow.

[3] In cultivated plants sometimes enlarged and petaloid.

[4] A sect. of this genus is *Hymenonema* Cass. *Bull. Soc. philom.* (1817); *Dict. sc. nat.* xxii. 316.—DC. *Prodr.* vii. 116.—Endl. *Gen.* n. 2996 (near *Scorzonera*).—B. H. *Gen.* ii. 505, n. 714: receptacle foveolate; pappus hairs few-seriate, unequal, barbellate; corolla yellow. Closely allied to *Catanance* is *Xeranthemum*, distinguished only by the shortness of the upper cleft of the corolla. The *Cichorieæ* hence are closely connected with the *Carduceæ*. The corolla tube, as in *Xeranthemum*, finally becomes thicker and fleshy at the base. The same is observed in the involucral bracts.

[5] Spec. about 6. Desf. *Fl. atl.* t. 217; *Ann. Mus.* i. t. 9 (*Scorzonera*).—Sibth. *Fl. græc.* t. 789 (*Scorzonera*), 821.—Reichb. *Ic. Fl. germ.* t. 1363.—Boiss. *Fl. or.* iii. 713.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 210.—Gren. et Godr. *Fl. de Fr.* ii. 285.—*Bot. Mag.* t. 293.—Walp. *Ann.* v. 318.

[6] *DC. Prodr.* vii. 83.—Endl. *Gen.* n. 2966 [2].—*Hænseleria* B. H. *Gen.* ii. 505, n. 716.

[7] Yellow.

[8] Rather a sect. of *Catanance*?

[9] Spec. 1. *H. granatensis* Boiss.

[10] *Gen.* n. 907.—Gærtn. *Fruct.* ii. 366, t. 159.—DC. *Prodr.* vii. 128.—Endl. *Gen.* n. 2999.—B. H. *Gen.* ii. 511, 1238, n. 734.—*Medicusia* Mœnch, *Meth.* 536.—*Microderis* DC. *Prodr.* vii. 127.—*Spitzelia* Sch. bip. *Flora* (1833), 725.—*Ptilosia* Tausch, *Flora* (1828), i. *Erganz.* 78.—*Hagioseris* Boiss. *Diagn. or.* xi. 35.

[11] Yellow, red or pink.

incurved, slightly or long rostrate, subterete or 5–20-angular; ribs smooth or little or much transversely rugose; pappus hairs ∞, equal or unequal, glabrous or variously plumose; the exterior shorter or very short, sometimes 0.—Annual or perennial herbs; leaves alternate or basal rosulate, sometimes amplexicaul, entire, coarsely dentate, pinnatifid or multisected; capitules terminal, solitary or variously and loosely corymbiform cymose; involucral bracts many-seriate; the exterior smaller more or less patulous or sometimes larger; receptacle flat or nearly so, bare or fringed.[1] (*Temp. and warm reg. of both worlds.*[2])

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[1] Sections of the genus are:

Helminthia J. *Gen.* 170.—DC. *Prodr.* vii. 132.—Endl. *Gen.* n. 3000.—*Viræa* Vahl, *Hornem. Hort. Hafn.* (ex DC.).—*Deckera* Sch. bip. *Flora* (1834), 479 (part.): outer involucral bracts large and foliaceous; inner thickly subcarinate at base; fruit long-rostrate; hairs of highly caducous pappus very thin.

Crepis L. *Gen.* n. 914.—DC. *Prodr.* vii. 160.—Spach, *loc. cit.*—Endl. *Gen.* n. 3022.—B. H. *Gen.* ii. 513, n. 735: ribs of fruit ∞, short or shortly rugose; pappus hairs simple or scarcely denticulate, persistent, or caducous. Syn. or subsect. of *Crepis* are: *Catonia* Mœnch, *Meth.* 535.—*Lepicaune* Lap. *Pl. pyrén.* 478.—*Omalocline* Cass. *Di* . xlviii. 431.—*Calliopea* Don, *Edinb. Phil. Journ.* (1828), 309.—*Derouetia* Boiss. *Diagn. or.* ser. 2, v. 114.—*Ætheorrhiza* Cass. *Dict.* xlviii. 425.—*Soyeria* Monn. *Ess. Hierac.* 75.—Koch, *Syn. Fl. germ.* ed. 1, 442.—*Hapalostephium* Don, *loc. cit.* 307.—*Aracium* Monn. *loc. cit.* 73.—*Intybella* Monn. *loc. cit.* 78.—*Intybus* Fries, *Nov. Fl. suec.* ed. 2, 244.—*Geracium* Reichb. *Mœssl. Fl. Deutschl.*; *Fl. germ. exc.* 259.—*Anisoramphus* DC. *Prodr.* vii. 251.—Endl. *Gen.* n. 3028^{1}.—*Barkhausia* Mœnch, *Meth.* 537.—DC. *Prodr.* vii. 152.—Endl. *Gen.* n. 3021.—*Barkhusenia* Hoppe, *Flora* (1829), 512.—*Paleya* Cass. *Dict.* xxxix. 393.—*Lagoseris* Link, *Enum. Hort. berol.* ii. 289 (not Bieb.).—*Anthochytrum* Reichb. *Ic. Fl. germ.* xix. 39, t. 1432.—*Billotia* Sch. bip. *Jahrb. Pharm.* iv. 155; *Flora* (1859), 707.—*Heteroseris* Boiss. *Fl. or.* iii. 793.—*Vigineixia* Pom. *N. mat. Fl. atl.* 12.—*Psammoseris* Boiss. *Diagn. or.* xi. 52.—*Anisoderis* Cass. *Dict.* xlviii. 429.—*Hostia* Mœnch, *Meth.* Suppl. 221 (not Jacq.).—*Borkhausia* Link, *Enum. Hort. berol.* ii. 290.—*Nemauchenes* Cass. *Dict.* xxxiv. 362.—*Ceramiocephalum* Sch. bip. *Bull. Soc. bot. Fr.* ix. 284.—*Gatyona* Cass. *Dict.* xviii. 184.—*Crepidium* Tausch, *Flora* (1828), i. *Ergänz.* 80 (not Nutt.).—*Endoptera* DC. *Prodr.* vii. 178.—*Crepidium* Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 435.—*Psilochenia* Nutt. *loc. cit.* 437.—*Brachyderea* Cass, *Dict.* xlviii. 429.—*Berinia* Brignol. *Pl. Forojul.* 50.—*Youngia* Cass. *Op. phyt.* iii. 86.—DC. *Prodr.* vii. 192.—Endl. *Gen.* n. 3004^{2}.

Pterotheca Cass. *Bull. Soc. philom.* (1816); *Dict. sc. nat.* xliv. 56.—DC. *Prodr.* vii. 179.—B. H. *Gen.* ii. 516, n. 737.—*Crepinia* Reichb. *Fl. germ. exc.* 269.—*Intybellia* Cass. *Dict.* xxiii. 547.—*Trichocrepis* Vis. *St. dalm.* 19, t. 7: fruit 8–10-costate; pappus ∞-setose, annulately deciduous at base; receptacle setiform-paleaceous. Medit., mid. and west. Asiatic plants.

Rodigia Spreng. *N. Entd.* i. 275 (part.).—DC. *Prodr.* vii. 98.—Endl. *Gen.* n. 3021^{1}.—B. H. *Gen.* ii. 511, n. 732: fruit rostrate; pappus hairs membrano-paleaceous. Medit. plant.

Phæcasium Cass. *Dict.* xxxix. 387.—DC. *Prodr.* vii. 160.—B. H. *Gen.* ii. 515, n. 736.—*Sclerophyllum* Gaud. *Fl. helv.* v. 47.—*Idianthes* Desvx, *Fl. Anjou,* 199.—*Cymboseris* Boiss. *Diagn. or.* xi. 50: fruit attenuate at apex and thinly ∞-costate; hairs of deciduous pappus ∞; receptacle epaleaceous.

Phalacroderis DC. *Prodr.* vii. 97.—Endl. *Gen.* n. 2988^{2}.—B. H. *Gen.* ii. 511, n. 733. A Greek plant; by its very small paleaceous pappus very like *Rodigia* or *Picris*, of which some consider it an abnormal form (Boiss. *Fl. or.* iii. 880).

[2] Spec. about 160. Boiss. *Fl. or.* iii. 733, 831 (*Crepis*), 880 (*Rodigia*).—Benth. *Fl. austral.* iii. 677, 678 (*Crepis*).—Hook. f. *Handb. New Zeal. Fl.* 164.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 218, 245 (*Crepis*).—Miq. *Fl. ind.-bat.* ii. 114 (*Youngia*).—Maxim. *Bull. Acad. Pét.* xix. 520; *Mél. biol.* ix. 345.—Oliv. and Hiern. *Fl. trop. Afr.* iii 448.—A. Gray, *Proc. Amer. Acad.* vi. 553.—Gren. et Godr. *Fl. de Fr.* ii. 301, 329 (*Pterotheca, Crepis*).—Walp. *Rep.* ii. 689, 697 (*Crepis*), 993; vi. 352, 357 (*Crepis*); *Ann.* i. 461; ii. 964, 972 (*Crepis*), 976 (*Cymboseris*); v. 322, 328 (*Crepis*).

61. **Hieracium** T.[1]—Flowers[2] nearly of *Cichorium;* corollas ligulate, 5-dentate. Anthers shortly setaceous-acuminate at base. Fruit oblong terete, subcompressed or 4–10-costate, truncate at apex; pappus hairs ∞, 1–few-seriate simple rather stiff, persistent or caducous, oftener very fragile.—Perennial or biennial herbs; tomentum simple, glandular or stellate, rarely 0; leaves alternate or often rosulate at base, entire dentate or pinnatifid; capitules solitary or cymose at top of scape; bracts of often subcampanulate involucre narrow, ∞-seriately imbricate; the exterior often shorter; all often unchanged after anthesis; receptacle flat, bare or foveolate, often short-fringed or hairy between the flowers.[3] (*Europe, temp. Asia, Medit. reg., north. and south. Africa, N. Andine and extratrop. S. America.*[4])

62. **Leontodon** L.[5]—Flowers[6] nearly of *Cichorium;* corollas ligulate, 5-dentate. Fruit more or less contracted at base, truncate or oftener more or less contracted or rostrate at apex; pappus hairs 5–∞, simple, short- or long-plumose.—Annual or perennial herbs; hairs simple, branched or 0; leaves alternate, rosulate at base, entire, coarsely dentate or pinnatifid; capitules

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[1] *Inst.* 469, t. 267.—I. *Gen.* n. 913.—DC. *Prodr.* vii. 199.—Tausch, *Flora* (1828), i. *Erganz.* 49.—Endl. *Gen.* n. 3026.—B. H. *Gen.* ii. 516, n. 738.—*Miegia* Neck. *Elem.* i. 49.—*Apatanthus* Viv. *Fl. lib. Spec.* 54, t. 7, fig. 3.—DC. *Prodr.* vii. 254.—*Crepidospermum* Fries, *Epicr. Hier.* 153 (not Thw.).—*Heteropleura* Sch. bip. *Flora* (1862), 434.—*Pilosella* Sch. bip. *loc. cit.* 417.—*Mandonia* Sch. bip. *Linnæa*, xxxiii. 757 (not Wedd.).—*Stenotheca* Monn. *Ess. Hierac.* 71.—*Chlorocrepis* Griseb. *Comm. gen. Hierac.* 75.—*Schlagintweitia* Griseb. *loc. cit.* 76.

[2] Yellow, golden or red.

[3] A sect. of the genus is *Andryala* L. *Gen.* n. 915.—DC. *Prodr.* vii. 244.—Endl. *Gen.* n. 3025.—B. H. *Gen.* ii. 517, n. 739.—*Forneum* Adans. *Fam. pl.* ii. 112.—*Voightia* Roth, *Rœm. et Ust. Mag.* iv. (x.) 17.—*Rothia* Schreb. *Gen.* 531 (not Lamk, nor Pers.): stem biennial or perennial; indumentum densely lanate or stellate; receptacle fringed or setiferous. Native of the Canaries and Medit. reg.

[4] Species to 400 enumerated by various authors and to be reduced as much as possible. Monn. *Ess. Hierac.* (1829).—Griseb. *Comm. Hierac. eur.* (1852).—Fries, *Epicr. Hierac. Ups.* (1862).—Boiss. *Diagn. or.* ser. 2, iii. 101; v. 117; *Fl. or.* iii. 858, 879 (*Andryala*).—A. Gray, *Proc. Amer. Acad.* vi. 553; vii. 365; *Man.* (1856), 236.—Phil. *Linnæa*, xxxiii. 125.—Harv. et Sond. *Fl. cap.* iii. 529.—Fr. et Sav. *Enum. pl. jap.* i. 273.—Chapm. *Fl. S. Unit. States*, 250.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 251, 270 (*Andryala*).—Gren. et Godr. *Fl. de Fr.* ii. 343, 388 (*Andryala*).—Webb, *Phyt. canar.* t. 135; *Ot. hisp.* t. 11 (*Andryala*).—Sibth. *Fl. græc.* t. 811 (*Andryala*).—Walp. *Rep.* ii. 699; *Ann.* i. 465, 998; ii. 981; v. 329.

[5] *Gen.* n. 912.—DC. *Prodr.* vii. 101.—Endl. *Gen.* n. 2990.—B. H. *Gen.* ii. 520, n. 743.—*Apargia* Scop. ex Schreb. *Gen.* 527.—Less. *Syn.* 132.—*Thrincia* Roth, *Cat.* i. 97.—DC. *Prodr.* vii. 99.—Endl. *Gen.* n. 2989.—*Colobium* Roth, *Rœm. Arch.* i. 36.—*Plancia* Neck. *Elem.* i. 49.—*Antodon* Neck. *loc. cit.* 58.—*Millina* Cass. *Dict.* xxxi. 89.—DC. *Prodr.* vii. 109 (part.).—Endl. *Gen.* n. 2991.—*Asterothrix* Cass. *Dict.* xlviii. 434.—*Deloderium* Cass. *loc. cit.* 430.—*Oporinia* Don, *Edinb. new Phil. Journ.* (1828–29), 309.—DC. *Prodr.* vii. 108.—*Apargidium* Torr. et Gr. *Fl. N.-Amer.* ii. 74.—*Hemilepis* Kze, *Ind. sem. Hort. lips.* ex *Bot. Zeit.* (1852), 875.—*Fidelia* Sch. bip. *Flora* (1834), 482.—*Streckera* Sch. bip. *loc. cit.* 483.—*Kalbfussia* Sch. bip. *Flora* (1833), 723.—DC. *Prodr.* vii. 101.—Endl. *Gen.* n. 3001.

[6] Yellow.

solitary or variously cymose at top of scape; bracts of involucre imbricate, ∞-seriate; the exterior gradually increasing or short patulous; the interior sometimes carinately thickened after anthesis; receptacle flat, bare, foveolate, villose, fringed or sometimes transparently paleaceous.[1] (*All temp. reg.*[2])

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[1] A genus very closely allied to the preceding. Sections are:

Hypochœris L. *Gen.* n. 918.—DC. *Prodr.* vii. 90.—Less. *Syn.* 130.—Endl. *Gen.* n. 2985.—Sch. bip. *Nov. Acta nat. cur.* xxi. 87.—Rgl, *Linnæa*, xvi. 49.—B. H. *Gen.* ii. 519, n. 742.—*Achyrophorus* Adans. *Fam. des pl.* ii. 112.—Scop. *Fl. carniol.* ii. n. 987.—Endl. *Gen.* n. 2986.—Tausch, *Flora* (1829), i. *Erganz.* 37.—*Porcellites* Cass. *Dict. sc. nat.* xliii. 42 (part.).—Less. *Linnæa*, vi. 102.—*Agenora* Don, *Edinb. new Phil. Journ.* (1828-29), 310.—*Seriola* L. *Gen.* n. 917.—*Fabera* Sch. bip. *Nov. Acta nat. cur.* xxi. 129.—*Piptopogon* Cass. *Dict.* xlviii. 507.—*Robertia* DC. *Fl. fr.* v. 453.—*Metabasis* DC. *Prodr.* vii. 97, 307.—*Robertia* DC. *Fl. fr.* v. 453.—*Oreophila* Don, *Phil. Mag.* xi. 388.—*Cycnoseris* Endl. *Bot. Zeit.* (1843), 458: receptacle paleaceous; pappus hairs 5-∞, plumose; fruit glabrous, scabrous or shortly ciliate.

Taraxacum Hall. *St. helv.* i. 23.—DC. *Prodr.* vii. 145.—B. H. *Gen.* ii. 522, n. 745.—*Dens Leonis* T. *Inst.* 468, t. 266.—*Leontodon* Adans. *Fam. des pl.* ii. 112.—*Lasiopus* Don, *Sweet Brit. fl. Gard.* ser. 2, t. 346 (not Cass.).—? *Caramanica* Tin. *Pl. rar. sic.* 3: lowest involucral bracts smaller patulous or recurved; receptacle bare; fruit rostrate, often muricately costate; pappus hairs ∞, unequal and simple.

Anisocoma Torr. et Gr. *Bost. Journ. Nat. Hist.* v. 111, t. 13.—B. H. *Gen.* ii. 518, n. 741. ? *Pterostephanus* Kellog, *Proc. Calif. Acad. nat. sc.* iii. 20, fig. 4: fruit sericeous; pappus hairs 5-10, girt externally at base with cupular top of receptacle; receptacle setiform paleaceous. N. America.

Troximon Nutt. *Fras. Cat.* (1813); *Gen. pl. N.-Amer.* ii. 127, 128 (not Gærtn., nor Don, nor Sims).—DC. *Prodr.* vii. 251.—B. H. *Gen.* ii 522, n. 744.—*Agoseris* Rafin. *Fl. ludov.* 58.—*Kymapleura* Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. orr.—*Stylopappus* Nutt. *loc. cit.* 431.—*Cryptopleura* Nutt. *loc. cit.*—*Macrorhynchus* DC. *Prodr.* vii. 151.—Less. *Syn.* 139.—*Trochoseris* Endl. *Gen.* n. 3018.—*Ammogeton* Schrad. *Ind. sem. H. gœtt.* (1833); *Linnæa*, x. *Litt.* 69.—DC. *Prodr.* vii. 98.—Endl. *Gen.* n. 3021 [2]: involucral bracts gradually shorter and looser outwards; receptacle bare, foveolate or sparsely paleaceous; fruit contracted or rostrate at apex costate; ribs scabrous, smooth or sometimes partly alate or difformed. From extratropical N. and S. America.

Pyrrhopappus DC. *Prodr.* vii. 144 (part.), not A. Rich.—B. H. *Gen.* ii. 523, n. 746: leaves glabrous; receptacle bare; ribs of rostrate fruit ∞, muricate or scabrous; pappus hairs ∞, persistent or deciduous (generally reddish). N. America.

Calycoseris A. Gray, *Pl. Wright.* ii. 104, t. 14; *Emor. Exp. Bot.* 106.—B. H. *Gen.* ii. 523, n. 747: fruit of *Pyrrhopappus*; pappus hairs (white) deciduous; receptacle long setiferous between the flowers. Mexico.

Malacothryx DC. *Prodr.* vii. 192.—Endl. *Gen.* n. 3004 [1].—B. H. *Gen.* ii. 518, 1238, n. 740.—*Malacomeris* Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 435.—*Leptoseris* Nutt. *loc. cit.* 438.—*Leucoseris* Nutt. *loc. cit.* 439: flowers of *Calycoseris* (sometimes "white or purple"); fruit truncate at apex; outer pappus hairs (white) few more rigid; inner annulately deciduous, 1-seriate; receptacle bare; stem annual or perennial; leaves glabrous or lanate. California.

[2] Spec. about 110 (descr. ultra 200). W. *Hort. berol.* t. 47.—Torr. et Gr. *Fl. N.-Amer.* ii. 485 (*Malacothrix*), 489 (*Troximon*).—Hook. *Fl. bor.-amer.* t. 104 (*Troximon*).—Boiss. *Diagn. or.* ser. 2, iii. 87; v. 117; *Fl. or.* iii. 726 (*Thrincia*), 727, 783 (*Hypochœris*), 785 (*Seriola*), 786 (*Taraxacum*).—A. Gray, *Man.* (1856), 236, 239 (*Troximon*).—Harv. and Sond. *Fl. cap.* iii. 525 (*Hypochœris*), 526 (*Taraxacum*).—Benth. *Fl. austral.* iii. 677 (*Hypochœris*).—Hook. f. *Handb. New Zeal. Fl.* 165 (*Taraxacum*); *Fl. antarct.* t. 112 (*Taraxacum*).—Chapm. *Fl. S. Unit. St.* 251 (*Taraxacum*).—Griseb. *Fl. brit. W.-Ind.* 384 (*Taraxacum*).—Willk. et Lge, *Prodr. Fl. hisp.* ii. 213 (*Thrincia*), 215 (*Kalbfussia, Leontodon*), 228 (*Hypochœris*), 229 (*Seriola*), 230 (*Taraxacum*).—Gren. et Godr. *Fl. de Fr.* ii. 292 (*Hypochœris*), 295 (*Seriola, Robertia*), 296 (*Thrincia*), 297.—Walp. *Rep.* ii. 685 (*Troximon*), 686 (*Hypochœris*); vi. 328 (*Achyrophorus*), 339 (*Hypochœris*), 343 (*Seriola*), 345 (*Millina*); *Ann.* ii. 956 (*Troximon, Achyrophorus*), 957 (*Hypochœris, Kalbfussia*), 959 (*Millina*); v. 319 (*Achyrophorus*), 328 (*Calycoseris*).

63. **Lapsana** T.[1]—Flowers[2] nearly of *Cichorium;* corolla ligulate, at apex truncate, 5-dentate, valvate. Anthers acute or shortly acuminate at base. Style branches long-subulate. Fruit oblong, straight or curved terete or slightly compressed, glabrous, obtusely ∞-costate; pappus 0.—Annual herbs, oftener slender branched, glabrous or sparsely glandular or pilose; leaves alternate, entire, coarsely dentate, or the lower pinnatifid or few-lobed, sometimes amplexicaul at base; capitules (small) long and slenderly pedunculate or loosely cymose; bracts of subcampanulate involucre imbricate, 2-morphous; the interior erect subcarinate, sub-1-seriate; the exterior much smaller few or 0; receptacle small foveolate, bare or slightly pilose.[3] (*North. hemisph. of New and Old Worlds.*[4])

64. **Hispidella** Barnad.[5]—Flowers[6] ligulate; corolla 5-dentate, longer in exterior flowers. Anthers acute at base, setaceous or acuminate. Fruit unequally ovoid or oblong, glabrous, very thinly or scarcely costate, without pappus.—A branching annual, long-setaceous-hispid; leaves alternate, elongate or sublanceolate entire; capitules terminal in few-leaved or bracteate scapes perceptibly dilated at apex; bracts of subcampanulate or subglobular involucre long-setose, 2-morphous; the interior 1–few-seriate erect connivent; the exterior smaller setiform or 0; receptacle convex alveolate; alveoles much fringed at raised margin.[7] (*Spain.*[8])

65. **Zacintha** T.[9]—Flowers[10] ligulate; anthers at base setaceous-acuminate or acute. Style branches thin, rather obtuse at apex. Fruit oblong, terete or angular; the exterior sometimes thicker, obtusely 4–5-costate, at apex obtuse or more or less long-rostrate or incurved; pappus hairs narrow or short, sometimes subdilated or partly paleaceous.—Glabrous herbs, often annual,

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[1] *Inst.* 479, t. 272 (*Lampsana*).—L. *Gen.* n. 919 (part.).—J. *Gen.* 168 (*Lampsana*).—DC. *Prodr.* vii. 76.—Endl. *Gen.* n. 2967 (*Lampsana*).—B. H. *Gen.* ii. 509, n. 725.

[2] Yellow.

[3] A sect. of the genus is *Apogon* Ell. *Bot. S. Carol.* ii. 267.—DC. *Prodr.* vii. 78.—B. H. *Gen.* ii. 509, n. 726: fruit shorter; ribs fewer (8–10). N. America.

[4] Spec. 4, 5. Reichb. *Ic. Fl. germ.* t. 1353.—A. Gray, *Man.* (1856), 235; *Mem. Amer. Acad.* ser. 2, vi. 396.—Fr. et Sav. *Enum. pl. jap.* i. 266.—Griseb. *Fl. brit. W.-Ind.* 384.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 211.—Gren. et Godr. *Fl. de Fr.* ii. 291.—Walp. *Rep.* vi. 327; *Ann.* ii. 951.

[5] Ex Lamk, *Dict.* iii. 134.—Cass. *Dict. sc. nat.* xxi. 248.—DC. *Prodr.* vii. 258.—B. H. *Gen.* ii. 508, n. 724.—*Soldevilla* Lag. *Elench. Matr.* 24.—Don, *Edinb. new Phil. Journ.* (1829), 310.—Less. *Syn.* 127.—Endl. *Gen.* n. 2968.

[6] Yellow.

[7] Closely allied to *Tolpis.*

[8] Spec. 1. *H. hispanica* Lamk.—*H. Barnadesii* Cass.—*Soldevilla setosa* Lag.—*Arctotis hispidella* J. (ex Cass.).

[9] *Inst.* 476, t. 269.—Gærtn. *Fruct.* ii. 358, t. 157.—DC. *Prodr.* vii. 178.—Endl. *Gen.* i (*Zacyntha*).—B. H. *Gen.* ii. 511, n. 731.

[10] Yellow.

divaricately ramose; leaves oftener 2-morphous; the inferior lyrate, sinuate-dentate or coarsely dentate; stem-leaves few sometimes amplexicaul or auriculate, entire or sinuate-dentate; capitules sessile in forks of branches or (spuriously) lateral; peduncle more or less dilated at apex and hollow; involucral bracts few connivent in a sac, finally accrescent around fruit gibbous and hardened; the exterior few (or 0) smaller; receptacle flat, sparsely pilose or bare between the fruit.[1] (*Medit. reg., temp. central and west. Asia.*[2])

66. **Hedypnois** T.[3]—Flowers[4] 1-morphous; corolla ligulate, 5-dentate. Anthers acute or sericeous-acuminate at base. Style branches thin rather obtuse. Fruit sessile elongate narrow, terete or more rarely rather compressed, 5–10-costate, erostrate or shortly rostrate, at back muricate to all ribs, much incurved and finally stellately open, glochidiate at apex (*Kœlpinia*[5]), or crowned with a more or less setose pappus, connivent (*Euhedypnois*), or more rarely recurved, longer stellately open, without or with very short pappus (*Rhagadiolus*[6]), or sometimes (*Garhadiolus*[7]) connivent and minutely pappose; the exterior smooth, the interior muricate at back.—Annuals, glabrous or more rarely softly pilose; leaves entire, variously dentate or pinnatifid or lyrate; capitules stipitate or sessile in subspicate (1-lateral) cymes; bracts of cylindrical-campanulate involucre few, herbaceous or finally hardened and at base carinate connivent, surrounding the outer fruit; additional exterior few much smaller or 0; receptacle small bare or sparsely setose between the flowers.[8] (*Mid. Asia, Medit. reg.*[9])

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[1] Sections of the genus are :

Acanthocephalus Kar. et Kir. *Bull. Mosc.* (1842), 127.—B. H. *Gen.* ii. 510, n. 730.—*Harpocarpus* Endl. *Gen.* Suppl. iii. 70.—*Harpachæna* Bge, *Del. sem. Hort. dorpat.* (1845), ex *Linnæa*, xix. 396 : involucre finally subglobose or shortly ovoid; bracts hardened, externally hirsutely muricate; fruit with a narrow long-conical rigid beak; pappus short paleaceous. Indigenous in Altai and Afghanistan.

Heteracia Fisch. et Mey. *Ind. sem. Hort. petrop.* (1835), 31.—DC. *Prodr.* vii. 178.—Endl. *Gen.* n. 3024.—B. H. *Gen.* ii. 510, n. 729 : involucral bracts hardened; outer fruit obpyramidal suberose-incrassate rostrate, often subecostate; pappus short or 0; inner narrower long-rostrate, oftener 4-costate; pappus hairs ∞, short patulous. Persia and Afghanistan.

[2] Spec. 5. Sibth. *Fl. græc.* t. 820.—Jaub. et Sp. *Ill. pl. or.* iii. t. 287 (*Heteracia*), 288 (*Harpachæna*).—Reichb. *Ic. Fl. germ.* t. 1424.—Boiss. *Fl. or.* iii. 724 (*Heteracia*), 829.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 244 (*Zacintha*).—Gren. et Godr. *Fl. de Fr.* ii. 328.—Walp. *Ann.* ii. 953 (*Harpachæna*).

[3] *Inst.* 478; *Cor.* 36, t. 271 (not Gærtn.).—Schreb. *Gen.* 532.—*Hyoseris* Gærtn. *Fruct.* ii. 372, t. 160 (not L.).

[4] Yellow.

[5] Pall. *Reis.* iii. 755, t. 1. fig. 2; ed. gall. v. 511, t. 19.—Less. *Syn.* 127.—DC. *Prodr.* vii. 78.—Endl. *Gen.* n. 2971.—B. H. *Gen.* ii. 509, n. 727.

[6] T. *Inst.* 479, t. 272.—J. *Gen.* 168.—Gærtn. *Fruct.* ii. 354, t. 157.—Endl. *Gen.* n. 2970 (*Rhagadiolus*).—B. H. *Gen.* ii. 510, n. 728.—*Hedypnois* DC. *Prodr.* vii. 81.

[7] Jaub. et Spach, *Ill. pl. or.* iii. 119, t. 284, 285.

[8] Sections, apparently, 4 : 1. *Euhedypnois*; 2. *Rhagadiolus*; 3. *Garhadiolus*; 4. *Kœlpinia*.

[9] Spec. 5, 6. Cav. *Icon.* t. 43 (*Hyoseris*).—Sibth. *Fl. græc.* t. 812, 813, 817, 818, 819

67. **Scolymus** T.[1]—Flowers[2] irregular, all hermaphrodite, 1-morphous; corolla ligulate, at truncate apex 5–6-dentate. Anthers at base shortly auriculate obtuse or mucronate. Style branches linear recurved, acute at apex. Fruit compressed, deciduous with axillate bract and closely enclosed by its base, crowned at apex by a short ring and furnished with 2, or more rarely 3, 4, lateral hairs, filiform deciduous.—Glabrous (carduaceous) herbs; leaves alternate rigid, spinescent-pinnatifid or dentate (often white-spotted); capitules terminal or lateral sessile, glomerulate; involucral bracts imbricate, 2–few-seriate, spinescent or mucronate; the interior gradually thinner and broader, at dilated base enclosing axillate flower; receptacle (generally bare) small convex or conical. (*Medit. reg.*[3])

68. **Scorzonera** T.[4]—Flowers[5] irregular; corolla ligulate, at truncate apex 4–6-dentate. Anthers at base acutely or shortly setaceous-acuminate-auriculate. Style branches thin, finally recurved, at apex acute or rather obtuse. Fruit glabrous or villose, oftener minutely ∞-costate, at base sometimes contracted or stipitate and more rarely produced in a curved appendage; beak short or elongate (sometimes 0), full or hollow; pappus hairs ∞, simple or very shortly barbellate, oftener plumose, free or connate at base.—Perennial or more rarely annual herbs, glabrous, setose, floccose, lanate or hirsute; leaves alternate, entire, linear or broad or oftener pinnately lobed or dissected; capitules terminal, long stipitate, solitary, or loosely cymose few; involucral bracts ∞, imbricate, subequal, or the exterior shorter more or less patulous, unchanged after anthesis; receptacle flat or slightly convex, bare, foveolate (often cartilaginous at margin of foveoles), or villose.[6]

B. *Ic. Fl. germ.* t. 1355, 1356 (*Rhagadiolus*), 1361, 1362.—JAUB. et SP. *Ill. pl. or.* t. 286 (*Kœlpinia*).—BOISS. *Fl. or.* iii. 721, 722 (*Rhagadiolus*).—WILLK. et LGE, *Prodr. Fl. hisp.* ii. 212 (*Rhagadiolus*).—GREN. et GODR. *Fl. de Fr.* ii. 290 (*Rhagadiolus*).—WALP. *Ann.* ii. 952 (*Garhadiolus*), 953 (*Kœlpinia*); v. 317 (*Kœlpinia*).

[1] *Inst.* 480, t. 273.—L. *Gen.* n. 922.—CASS. *Dict. sc. nat.* xxv. 60; xxxiv. 86.—DC. *Prodr.* vii. 75.—ENDL. *Gen.* n. 2965.—B. H. *Gen.* ii. 504, n. 711.—*Gymnospermus* GÆRTN. *Fruct.* t. 157, fig. 4 (ex ENDL.).—*Myscolus* CASS. *Bull. Soc. philom.* (1818); *Dict.* xxv. 60; xxxiv. 83.

[2] Yellow.

[3] Spec. 3. DESF. *Fl. atl.* t. 218.—SIBTH. *Fl. græc.* t. 824, 825.—REICHB. *Ic. Fl. germ.* t. 1352, 1353.—WILLK. et LGE, *Prodr. Fl. hisp.* ii. 203. GREN. et GODR. *Fl. de Fr.* ii. 390.

[4] *Inst.* 476, t. 269.—L. *Gen.* n. 906.—LESS. *Syn.* 134.—DC. *Prodr.* vii. 117.—ENDL. *Gen.* n. 2997.—PAYER, *Fam. nat.* 22.—B. H. *Gen.* ii. 531, n. 762.—*Achyroseris* SCH. BIP. *Nov. Acta nat. cur.* xxi. 165.—*Fleischeria* HOCHST. et STEUD. exs. *Fleischer.*

[5] Yellow or more rarely purplish or pink (or sometimes "azure" ? ?).

[6] Sections of the genus are: *Tragopogon* T. *Inst.* 477, t. 270.—L. *Gen.* n. 905.—GÆRTN. *Fruct.* ii. 386, t. 159.—DC. *Prodr.* vii. 112.—

(*All temp. reg. of Old World, south-west, N. and extratrop. S. America.*[1])

69. **Tourneuxia** Coss.[2]—Flowers[3] homogamous fertile; corolla ligulate. Anthers setaceous pointed at base. Style branches thin

Endl. *Gen.* n. 2995.—B. H. *Gen.* ii. 530, n. 760. —*Geropogon* L. *Gen.* n. 904.—DC. *Prodr.* vii. 111.—Endl. *Gen.* n. 2992 involucral bracts 1-seriate; fruit short- or long-rostrate; leaves entire.

Picrosia Don, *Trans. Linn. Soc.* xvi. 183.—DC. *Prodr.* vii. 251.—Endl. *Gen.* n. 3030.—B. H. *Gen.* ii. 530, n. 759.—*Psilopogon* Phil. *Linnæa*, xxxiii. 126 (ex B. H.): involucral bracts few (6–9) subequal; fruit perceptibly rostrate; receptacle epaleaceous; pappus hairs simple inserted in short cupule. S. America.

Podospermum DC. *Fl. fr.* iv. 61; *Prodr.* vii. 110.—Endl. *Gen.* n. 2993: fruit produced in a basal appendage; pappus plumose; leaves often pinnatifid.

Gelasia Cass. *Bull. Soc. philom.* (1818); *Dict. sc. nat.* xviii. 285; xlii. 81.—*Galasia* Less. *Syn.* 134.—Endl. *Gen.* n. 2998.—*Lasiospora* Cass. *Dict.* xxv. 306.—*Lasiospermum* Fisch. *Cat. Hort. Gorenk.* (not Lag.): fruit often villose; pappus hairs barbellate or serrate, shortly plumose or formed of longer and deciduous plumes.

Urospermum Scop. *Introd.* n. 366.—DC. *Prodr.* vii. 116.—Endl. *Gen.* n. 2994.—*Arnopogon* W. *Spec.* iii. 1496: involucral bracts subequal 1-seriate; beak of fruit dilated hollow at base, externally rugose; lower leaves pinnatifid or coarsely dentate. Africa and Medit. reg.

Pinaropappus Less. *Syn.* 143.—DC. *Prodr.* vii. 99.—Endl. *Gen.* n. 3031.—B. H. *Gen.* ii. 529, n. 757: involucral bracts imbricate, ∞-seriate; receptacle narrow-paleaceous; fruit rostrate, pappus hairs simple; corolla pink. Mexico. Allied to *Hypochæris* (a link connecting it closely with *Leontopodium*).

Scorzonella Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 426.—B. H. *Gen.* ii. 533, n. 765: involucre and fruit of true *Scorzonera;* pappus hairs simple or oftener plumose, more or less paleaceously dilated at base. 2, 3, Californian races.

Epilasia Boe, *Rel. Rehman.* 200.—B. H. *Gen.* ii. 532, n. 763: involucral bracts unequal; fruit ∞-costate, erostrate or more or less produced between the plumose pappus hairs; stem annual low, glabrous or heavy; leaves entire. Middle Asia, 1, 2, races.

Lygodesmia Don, *Edinb. N. Phil. Journ.* (1828–29), 311.—DC. *Prodr.* vii. 198.—B. H. *Gen.* ii. 530, n. 758.—*Erythremia* Nutt. *Trans. Amer. Phil. Soc* ser. 2, vi. 455: involucra bracts unequal: outer much smaller; fruit obtusely costate; beak short or 0; pappus hairs simple; receptacle bare; corollas red or pink. 5, 6, south-west. N. American races; stem reedy or spinescent, leafless or few-leaved (characters connecting this genus with *Lactuca* and *Prenanthes*).

? *Chætadelpha* A. Gray, ex S. Wats. *N. pl. Arizona*, 5; *Amer. Natur.* vii.—B. H. *Gen.* ii. 1238, n. 758 *a*: "outer involucral bracts shorter; receptacle of sub–5-florous capitule bare; fruit substriate between 5 angles; pappus hairs 1-seriate barbellate, strong and rigid at angles of fruit and more or less connate with intermediate hairs; stem perennial glabrous reed-like; leaves alternate linear-lanceolate entire." Native of N. America (unknown to us), apparently very near *Lygodesmia.*

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[1] Spec. about 175. Jacq. *Hort. vindob.* t. 33 (*Geropogon*), 106 (*Tragopogon*); *Fl. austr.* t. 35, 36, 305, 356; *Ic. rar.* t. 157–159; 577 (*Tragopogon*).—Vahl, *Symb.* ii. t. 44.—Ten. *Fl. nap.* t. 186 (*Tragopogon*).—Guss. *Ic. pl. rar.* t. 53–55.—Desf. *Fl. atl.* t. 212.—Sibth. *Fl. græc.* t. 779 (*Tragopogon*), 780–782 (*Arnopogon*), 783–788.—Waldst. et Kit. *Pl. rar. hung.* t. 121, 122.—Leder. *Ic. Fl. ross.* t. 30 (*Tragopogon*).—Scop. *Fl. carn.* ii. t. 46.—Hoffmsg. et Link, *Fl. portug.* t. 89, 90.—Vis. *Fl. dalmat.* t. 5.—Viv. *Fl. lyb. Spec.* t. 17.—Torr. et Gr. *Fl. N.-Amer.* ii. 484 (*Lygodesmia*).—Hook. *Bot. Misc.* ii. 221 (*Prenanthes*); *Fl. bor.-amer.* t. 103 (*Lygodesmia*). —Reichb *l c. Fl. germ.* t. 1377 (*Urospermum*), 1380–1386; 1387–1394 (*Tragopogon*).—Bory et Chaub. *Exp. Morée*, t. 30.—Boiss. *Voy. Esp.* t. 115 *a*; *Diagn.* ser. 2, iii. 89 (*Tragopogon*).—92; v. 116; *Fl. or.* iii. 743 (*Geropogon*), 744 (*Tragopogon*), 755.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 222 (*Podospermum*), 223; 225 (*Tragopogon*), 227 (*Geropogon*).—Gren. et Godr. *Fl. de Fr.* ii. 304 (*Urospermum*), 305; 309 (*Podospermum*), 310 (*Tragopogon*), 313 (*Geropogon*).—*Bot. Mag.* t. 479 (*Geropogon*), 2294, 3027.—Walp. *Rep.* ii. 689; vi. 347 (*Tragopogon*), 349; 732 (*Tragopogon*), 733; *Ann.* i. 460 (*Scorzonella*), 461; ii. 959 (*Podospermum*), 960 (*Tragopogon*), 961; iii. 916; v. 319 (*Podospermum, Tragopogon*), 320.

[2] *Bull. Soc. bot. Fr.* vi. 396; *Ann. sc. nat.* sér. 4, xviii. 211, t. 13.—B. H. *Gen.* ii. 532, n. 764.

[3] Yellow.

recurved. Fruit[1] obovoid, compressed at back, contracted at base; areole broad truncate, or emarginate to a very short stipes, rounded at apex, alate at rather thick margin, smooth at back; pappiferous disk oblique to apex of inner face; pappus hairs ∞, softly intricately plumose, finally open and applied to inner face of fruit.—A low annual, intricately lanate; stem contracted very short; leaves basal alternate subrosulate, linear, entire or obtusely and remotely dentate; capitules solitary stipitate; bracts of broadly subcampanulate involucre herbaceous or submembranous, few-seriate, imbricate, generally very unequal; the exterior gradually shorter and more or less tomentose or short-lanate at back; the interior thinner translucent. (*Algeria.*[2])

70. **Lactuca** T.[3]—Flowers[4] hermaphrodite (nearly of *Cichorium*), 1-morphous; corolla ligulate, at apex truncate, 5-dentate. Anthers at sagittate base acute, setaceous-acuminate or more rarely lacero-caudate. Style sometimes more or less thickened below and at base suddenly attenuated, generally girt with short epigynous disk, branches thin, oftener recurved. Fruit ovoidly oblong or sometimes very narrow, subterete or compressed, 2–∞-costate; pappus hairs ∞, simple, ∞-seriate, free at base or connate in a very short ring, persistent or sigillately caducous.—Annual, biennial or perennial herbs (oftener lactescent), sometimes frutescent, glabrous or variously pilose, sometimes hispid; stem scapelike or branched, sometimes very short or subnil; leaves rosulate or alternate, entire, sinuate, coarsely dentate or pinnatifid, occasionally auriculately amplexicaul, sometimes ciliate or setose at margin; capitules sessile or stipitate generally cymose or cymose-racemose; involucre narrow cylindrical, rather broadly tubular or more or less broadly campanulate; bracts glabrous or

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[1] Unknown to us (specimen seen very imperfect) (char. ex B. H.).

[2] Spec. 1. *T. variifolia* Coss.

[3] *Inst.* 473, t. 267.—L. *Gen.* n. 909.—Gærtn. *Fruct.* ii. 361, t. 158.—DC. *Prodr.* vii. 133.—Less. *Syn.* 135.—Endl. *Gen.* n. 3008.—B. H. *Gen.* ii. 524, 1238, n. 750.—*Mulgedium* Cass. *Dict. sc. nat.* xxxiii. 296.—DC. *Prodr.* vii. 501.—Less. *Syn.* 142.—Endl. *Gen.* n. 3028.—*Cicerbita* Wallr. *Sched. crit. Fl. hal.* 433.—*Agathyrsus* Don, *Edinb. N. Phil. Journ.* (1828), 310.—*Galathenium* Nutt. *Trans. Am. Phil. Soc.* ser. 2, vii. 442.—*Melanoseris* Dcne, *Jacquem. Voy. Bot.* 101, t. 109.—*Phœnixopus* Cass. *Dict.* xxxix. 391.—Endl. *Gen.* n. 3007.—*Phœnopus* DC. *Prodr.* vii. 176.—*Cyanoseris* Schur, *Enum. pl. transs.* 369.—*Brachyrhamphus* DC. *Prodr.* vii. 176; *Deless. Ic. sel.* iv. t. 96.—Endl. *Gen.* n. 3007[1].—*Lactucopsis* Sch. Bip. *Vis et Panc. pl. serb. rar. Decad.* ii. 5.—*Dubyæa* DC. *Prodr.* vii. 247 (part.).—Endl. *Gen.* n. 3027[1] (part.).—*Chorisma* Don, *Edinb. N. Phil. Journ.* (1828), 308.—*Chorisis* DC. *Prodr.* vii. 177.—*Streptorhamphus* Bge, *Rel. Lehm.* 205.—*Ixeris* Cass. *Dict.* xxiv. 49.—DC. *Prodr.* vii. 151.—*Mycelis* Cass. *Dict.* xxxiii. 483.—*Cephalorhynchus* Boiss. *Diagn. or.* iv. 28; vii. 11.—*Pyrrhopappus* A. Rich. *Fl. abyss.* i. 463.

[4] Yellow, ochrous, whitish, violet, purplish, or often azure.

hairy, equal, imbricate, or the interior elongate; the exterior gradually shorter or very short; receptacle bare, flat or rather convex.[1] (*All temp. and warm regions.*[2])

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[1] Sections of the genus are :

Sonchus T. *Inst.* 474, t. 268.—L. *Gen.* n. 908. —DC. *Prodr.* vi. 184.—Endl. *Gen.* n. 3003.—B. H. *Gen.* ii. 528, 1238, n. 755.—*Trachodes* Don, *Trans. Linn. Soc.* xvi. 182.—*Atalanthus* Don, *Edinb. N. Phil. Journ.* (1828–29), 311 : stem herbaceous, sometimes shrubby at base; involucre sometimes thickened at base after anthesis; ribs of erostate fruit 10-∞, smooth or rugose; pappus hairs soft (white), sigillately deciduous. Native of both worlds; corolla yellow.

Chondrilla T. *Inst.* 475, t. 268.—L. *Gen.* n. 910.—Less. *Syn.* 135.—DC. *Prodr.* vii. 141. —Endl. *Gen.* n. 3009.—B. H. *Gen.* ii. 524, n. 749.—*Willemetia* Neck. *Flem.* i. 50.—DC. *Prodr.* vii. 150.—*Wibelia* Rœhl. *Germ.* ii. 426 (ex DC.).—*Calycocorsus* Schm. *Phys. oek. auts.* i. 271 (ex DC.).—*Peltidium* Zollik. *Nat. Anz.* 1820 (ex DC.).—*Aspideium* Zollik. (ex DC.). —*Zollikoferia* Nees, *Bl. et Fingerh. Fl. germ.* ii. 305 (not DC.) : stem oftener reedy or much branched, few-leaved or nearly leafless; fruit subterete, long or shortly rostrate, ∞-costate, smooth or appendiculate or muricate above. Europe and Asia.

Prenanthes L. *Gen.* n. 911.—Gærtn. *Fruct.* ii. 358.—DC. *Prodr.* vii. 194.—Endl. *Gen.* n. 3005.—B. H. *Gen.* ii. 527, n. 752.—*Nabalus* Cass. *Dict. sc. nat.* xxxiv. 94.—DC. *Prodr.* vii. 240.—*Harpalyce* Don, *Edinb. N. Phil. Journ.* (1828-29), 308.—*Esopon* Rafin. *Fl. ludov.* 146 : stem herbaceous, sometimes erect or subscandent; capitules compound cymose or racemose, often slender or drooping; involucral bracts unequal; fruit subterete or obtusely angular, erostrate; hairs of sessile or subsessile pappus ∞, persistent or sigillately caducous; corollas white, pink or purplish. Native of north hemisphere of both worlds.

Microrhynchus Less. *Syn.* 139.—DC. *Prodr.* vii. 180.—B. H. *Gen.* ii. 528, n. 756.—*Ammoseris* Less. ex Endl. *Gen.* n. 3017.—*Launæa* Cass. *Dict.* xxv. 321.—*Lomatolepis* Cass. *Dict.* xlviii. 422.—DC. *Prodr.* vii. 180.—Endl. *Gen.* n. 3016.—*Rhabdotheca* Cass. *Dict.* xlviii. 424. —Endl. *Gen.* n. 3017.—*Zollikoferia* DC. *Prodr.* vii. 183; *Mém. Comp.* t. 18.—Endl. *Gen.* n. 3002[1] (not Nees) : stem herbaceous or subshrubby, branched or ascending, sometimes twigbearing, nearly leafless or few-leaved; fruit subcylindrical, obtusely costate or narrow, alate (sometimes nearly of the *Umbelliferæ*), truncate on both sides; pappus hairs thin unequal (*Old World*).

Heterachæna Fresen. *Mus. Senkenb.* iii. 74.—B. H. *Gen.* ii. 526, n. 751 : stem annual; leaves nearly of *Prenanthes;* capitules (small) in corymbiform cymes; fruit 2-morphous; the interior of *Microrhyncus*, thick at base; pappus subsessile; the exterior (of *Eulactuca*) compressed rugose, ∞-costate; pappus shortly stipitate, persistent or annulately caducous. Native of Arabia and Abyssinia.

? *Dianthoseris* Sch. bip. *Flora* (1842), 439.——B. H. *Gen.* ii. 527, n. 754 : stem perennial subnil (habit of *Werneria*); leaves rosulate, entire or dentate; capitules solitary or few sessile; outer bracts of involucre subfoliaceous; fruit erostrate, ∞-costate. Native of Abyssinia.

Stephanomeria Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 427.—B. H. *Gen.* ii. 533, n. 766.—*Jamesia* Nees, *Pr. Neuw. Itin. App.* 516 (not Torr. et Gr.): stem herbaceous, simple or divaricately branched; leaves entire or runcinate, narrow, few or subnil squamose; outer bracts of involucre much smaller than the rest; fruit rostrate or truncate, terete or obtusely truncate; pappus hairs ∞, plumose below, sigillately caducous. N. America.

[2] Spec. about 140. Jacq. *Hort. vindob.* i. t. 47; *Hort. schœnbr.* iii. t. 367; *Ic. rar.* t. 161 (*Sonchus*), 162.—Desf. *Ann. Mus.* xi. t. 19.—Sibth. *Fl. græc.* t. 790 (*Sonchus*), 794.—Webb, *Phyt. canar.* t. 124 (*Prenanthes*), 126–134 B, 136, 136 B (*Sonchus*).—Wight, *Icon.* t. 1141, 1142 (*Sonchus*), 1144.—Ledeb. *Ic. Fl. ross.* t. 87 (*Sonchus*), 129.—Pursh, *Fl. bor.-amer.* t. 24 (*Prenanthes*). — Hook. *Fl. bor.-amer.* t. 102 (*Nabalus*).—Salisb. *Par. lond.* t. 85 (*Prenanthes*).—Royle, *Ill. himal.* t. 61.—Mor. *Fl. sard.* t. 93.—Boiss. *Diagn.* ser. 2, iii. 96; *Fl. or.* iii. 791 (*Chondrilla*), 794 (*Willemetia*), 795 (*Sonchus*), 799 (*Mulgedium*), 803 (*Prenanthes*), 821 (*Zollikoferia*).—A. Gray, *Man.* (ed. 1856), 237 (*Nabalus*), 240; 241 (*Sonchus*).—Benth. *Fl. austral.* iii. 679 (*Sonchus*).—Harv. and Sond. *Fl. cap.* iii. 526; 527 (*Sonchus*).—Oliv. and Hiern, *Fl. trop. Afr.* iii. 450, 455 (*Heterachæna*), 456 (*Dianthoseris*), 457 (*Sonchus*), 460 (*Launæa*).—Klatt, *Ann. sc. nat.* sér. 5, xviii. 377.—Hook. f. *Handb. N. Zeal. Fl.* 165 (*Sonchus*).—Fr. et Sav. *Enum. pl. jap.* i. 268, 269 (*Ixeris*).—Maxim. *Bull. Acad. Petersb.* xix. 520; *Mél. biol.* ix. 352.—Chapm. *Fl. S. Unit. St.* 252; 253 (*Sonchus*).—Griseb. *Fl. brit. W.-Ind.* 384.—Miq. *Fl. ind.-bat.* ii. 109, 112 (*Sonchus*, *Mulgedium*); *Ann. Mus. lugd.-bat.* ii. 189.—Reichb. *Ic. Fl. germ.* t. 1408 (*Pre-*

71. **Glyptopleura** Eat.[1]—Flowers[2] (nearly of *Lactuca*) 1-morphous; corolla long-ligulate patulous, 5-dentate. Anthers at base acutely or acuminately auriculate. Style branches thin, finally recurved. Fruit oblong, obtusely angular rather glabrous; angles crenulate or smooth; faces not sculptured; abruptly attenuated above to a short neck presently cupularly dilated. Pappus hairs ∞, 2-seriate soft very slender, very caducous.—A low much branched annual; leaves basal obtusely pinnatifid; capitules[3] sessile between leaves; bracts of subcampanulate involucre polymorphous; receptacle nearly flat and bare. (*Utah.*[4])

72. **Dendroseris** Don.[5]—Flowers[6] (nearly of *Lactuca*) 1-morphous; corolla ligulate, 5-dentate. Anthers acutely or setaceously auriculate at base. Style branches thin rather acute, recurved. Fruit oblong or short, unequally corrugate, hard, few-costate or shortly unequally alate; pappus hairs ∞, simple thin.—Trees (lactescent); leaves alternate, sessile, or the lower petiolate, glabrous entire, lobed, 1- or 2-pinnate; capitules full racemoso-cymose at end of branch; bracts of broadly subcampanulate involucre ∞, imbricate, ∞-seriate, unequal; the outer gradually smaller, membranous or open above; receptacle flat or rather concave, foveolate, bare or ciliate between the flowers.[7] (*Juan-Fernandez.*[8])

73. **Fitchia** Hook. f.[9]—Flowers[10] 1-morphous; corolla ligulate, truncate at apex and 5-dentate. Anthers shortly and acutely auriculate at base. Style shortly and rather acutely 2-branched at apex. Fruit oblong, compressed sericeous, truncate at apex and 2-setose at margin; hairs erect, rigid at base, villose sub-

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nanthes), 1409—1415 (*Sonchus*), 1418-1423.—Willk. and Lge, *Prodr. Fl. hisp.* ii. 230 (*Chondrilla*), 234 (*Microrhynchus, Zollikoferia*), 235 (*Prenanthes*), 238 (*Mulgedium*), 239 (*Sonchus*).—Gren. and Godr. *Fl. Fr.* ii. 317, 323 (*Prenanthes*), 324 (*Sonchus*), 327 (*Mulgedium*).—Hook. *Icon.* t. 765.—*Bot. Reg.* (1846), t. 17.—*Bot. Mag.* t. 2130, 5211, 5219 (*Sonchus*).—Walp. *Rep.* ii. 689 (*Zollikoferia*), 690 (*Sonchus*), 691 (*Prenanthes, Nabalus*), 693, 694 (*Chondrilla*); vi. 352, 353 (*Cephalorhynchus*), 354 (*Melanoseris*), 355 (*Chondrilla*); *Ann.* i. 461, 463 (*Microrhynchus*); iii. 916 (*Zollikoferia, Sonchus*); v. 322 (*Zollikoferia*), 323 (*Sonchus, Prenanthes*), 324. (A genus, by the interposition of *Reichardia*, *Troximon*, &c., closely connected with *Crepis* and *Scorzonera*.)

[1] *Forth. parall. Bot.* 207, t. 20.—B. H. *Gen.* ii. 523, n. 748.

[2] "Purplish," pale when dried.

[3] From the size of the ligules recalling the single broadly gamopetalous patulous corolla.

[4] Spec. 1. *G. setulosa* A. Gray.

[5] *Phil. Mag.* xi. (1832), 388; *Edinb. N. Phil. Journ.* vi. 388.—Endl. *Gen.* n. 3032.—B. H. *Gen.* ii. 504, n. 712.—*Rea* Dcne., *Guillem. Arch. bot.* i. 513, t. 9, 10.—DC. *Prodr.* vii. 243.

[6] White.

[7] Remarkable for its tall woody stem; rather a sect. of *Lactuca* ?

[8] Spec. about 7. Hook. *Comp. Bot. Mag.* i. 32.—Remy, *C. Gay Fl. chil.* iii. 462 (*Rea*).—Hook. f. *Bot. Mag.* t. 6353.

[9] *Hook. Lond. Journ.* iv. 640, t. 23.—B. H. *Gen.* ii. 505, n. 713.

[10] Yellow.

plumose above.—Glabrous trees; leaves[1] alternate petiolate entire, capitules terminal solitary nutant; bracts of broad involucre ∞, imbricate, ∞-seriate, rounded to membranous apex, thickened at base; the outer shorter; receptacle loaded with narrow elongate 1-flowered bracts.[2] (*Otaheite.*[3])

IV. VERNONIEÆ.

74. **Vernonia** SCHREB.—Flowers homomorphous; tube of tubular regular or subregular corolla thin, sometimes dilated at base; lobes of limb generally 5, shorter or more rarely longer than the tube, equal or slightly unequal, valvate. Stamens 5, filaments filiform, inserted in tube; connective of dorsifixed anthers produced above; cells obtuse or more rarely pointed at base (generally polliniferous almost to the base). Ovarium obconical, sometimes costate; style inserted on rather thick disk, divided above in (sometimes short) subulate acute hirsute branches, finally revolute or recurved. Fruit generally inserted on a basal callus, 4–5-angulate or oftener longitudinally 8–10-costate and crowned with pappus, either duplex; inner hairs ∞, linear subterete or more rarely shortly dilated-complanate; short, or oftener scabrous or hirtellate, connate at base in a deciduous or persistent ring; outer hairs short, similar to the inner but shorter, sometimes broader paleaceous-scalelike, equal or very unequal, generally separately deciduous, sometimes few; or (from defect of outer hairs) simple.—Herbs or shrubs; indumentum various or 0; leaves alternate or very rarely opposite, entire or dentate, petiolate or sessile, penninerved or subenervate, sometimes linear rigid or coriaceous; capitules (sometimes few- or 1-flowered) terminal, solitary or oftener in cymes or glomerules; cymes often compound ramose, 1-parous; involucre subglobular, depressed, ovoid, subcylindrical, more rarely obconical or subcampanulate; bracts ∞, unequal. ∞-seriately imbricate, herbaceous or subscarious or dry, obtuse, acute, aristate or variously appendiculate; the outer shorter or sometimes foliaceous-dilated; receptacle flat epaleaceous

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[1] Large (nearly of *Thespesia*), unequal.

[2] Rightly of this series.

[3] Spec. 1, 2. A. GRAY, *Proc. Amer. Acad.* v. 146.—NAD. *Enum. pl. tait.* (1873), 49.—WALP. *Rep.* vi. 365.

foveolate or shortly fringed. (*All trop. and subtrop. regions.*)—*See p.* 22.

75. **Hoplophyllum** DC.[1]—Flowers (nearly of *Vernonia*) 1-morphous; corolla narrow-tubular. Stamens 5; anthers long-acuminate-auriculate at base. Fruit turbinately 3-quetrous villose; pappus hairs ∞, dissimilar, ∞-seriate; the outer shorter; the inner dilated at base, persistent.—Rigid branching undershrubs; leaves alternate, linear or acicular, pointed or spinose-dentate; capitules collected at end of twigs and subsessile in axils of uppermost leaves; bracts of elongate involucre ∞, imbricate, dry, obtuse or pointed; the outer gradually shorter; receptacle obconical, flat and bare above.[2] (*South Africa.*[3])

76. **Albertinia** Spreng.[4]—Flowers[5] (nearly of *Vernonia*) 1-morphous; limb of tubular corolla subcampanulate, valvate, 5-fid. Stamens 5; anthers obtusely auriculate at base. Style girt at base with epigynous disk; branches subulate, externally hirtellate. Fruit obconical truncate, 10-costate; pappus hairs thin, sub-2-seriate; the outer generally shorter.—A subglabrous shrub; leaves alternate, petiolate, entire or dentate, penninerved membranous; capitules few in terminal corymbiform cymes; bracts of depressed hemispherical involucre imbricate few-seriate, connate at base with each other and with margin of receptacle; the outer shorter; receptacle rather convex and produced in deep obconical alveoles around each ovary.[6] (*Trop. Brazil.*[7])

77. **Vanillosmopsis** Sch. bip.[8]—Flowers[9] of *Albertinia*, 1-morphous; anthers obtusely auriculate. Fruit 10-costate; pappus hairs ∞, very slender and caducous; the outer generally shorter.—Small trees or shrubs; leaves alternate, petiolate, entire or dentate, canescent beneath; capitules terminal or compound corymbiform cymes; glomerules numerous, 1-few-flowered forming the capitule,[10] each girt by its own pluribracteate and imbricate

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[1] *Prodr.* v. 73.—Endl. *Gen.* n. 2213; *Iconogr.* t. 34.—B. H. *Gen.* ii. 231, n. 18.

[2] A genus closely allied to *Vernonia*, except in habit.

[3] Spec. 2. L. f. *Suppl.* 357 (*Pteronia*).—Harv. and Sond. *Fl. cap.* iii. 53.

[4] *N. Entd.* ii. 133.—DC. *Prodr.* v. 80 (part.).—Deless. *Ic. sel.* iv. t. 4.—Endl. *Gen.* n. 2224 (part.).—Sch. bip. *Pollichia* (1861), 163.—B. H. *Gen.* ii. 227, n. 15.—*Symblomeria* Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 284.

[5] "Purplish."

[6] A genus closely allied to *Vernonia*, differing chiefly in the form of the receptacle.

[7] Spec. 1. *A. brasiliensis* Spreng. *Syst.* iii. 355, 434.—Less. *Linnæa* (1829), 341; *Syn.* 147.—Bak. *Mart. Fl. bras.* vi. p. ii. 17, t. 2, fig. 2.—*Vernonia brasiliensis* Less. *Linnæa* (1831), 682.

[8] *Pollichia* (1861), 166; (1863), 397.—B. H. *Gen.* ii. 226, n. 12.

[9] White (?) or purplish.

[10] Whence irregular centrifugal anthesis (of

involucre; general receptacle subhemispherical, convex above, below finally concave; bracts of short or subovoid general involucre unequal, imbricate, ∞-seriate. (*Trop. Brazil.*[1])

78. **Soaresia** Sch. bip.[2]—Flowers[3] (nearly of *Vernonia*) 1-morphous; limb of tubular corolla equally 5-fid. Anthers obtusely auriculate at base. Fruit (sericeous) truncate at apex, 10-costate; pappus hairs rather compressed, at base connate in a ring, 1-seriate, unequal, subscarious at dilated base.—A large sericeous-velutinous herb; leaves alternate, broad short sessile, many nerved from base, reticulate coriaceous; capitules collected in axils of uppermost leaves and consisting of numerous few- (3–5-) flowered glomerules[4] and girt with unequal imbricate bracts. *Trop. Brazil.*[5])

79. **Ethulia** L.[6]—Flowers[7] homomorphus; corolla tube thin; lobes of subequal campanulate limb 4, 5. Stamens same in number; anthers obtusely auriculate at base. Ovary 3–6-gonal;[8] style inserted at top of cupular disk; branches rather compressed acute papillose. Fruit 3–6-costate, areolate at apex and more or less callosely sinuate, without pappus. Other characters of *Vernonia*.—Branching herbs; leaves alternate, herbaceous acute, often serrate, penninerved; capitules in corymbiform cymes; involucral bracts unequal few-seriate, imbricate, whitish or dry at margin; receptacle small bare. (*Warm Asia and Africa.*[9])

80? **Pleurocarpæ** Benth.[10]—Flowers[11] (nearly of *Vernonia*) 1-morphous; fruit 10-costate, truncate at apex, glabrous, glandular between ribs; pappus hairs 2–5, short rigid very caducous.—A rigid herb, decumbent or divaricately ramose; leaves sessile, entire

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Soaresia), not regular centripetal, as in *Albertinia* (Sch. bip.).

[1] Spec. 6, 7. Deless. *Ic. sel.* iv. t. 5 (*Albertinia*).—DC. *Prodr.* v. 82 (*Albertinia*, part.).—Bak. *Mart. Fl. bras.* vi. p. ii. 13, t. 3.

[2] *Pollichia* (1863), 376.—B. H. *Gen.* ii. 236, n. 35.

[3] Dry white shining.

[4] The flowers of which, like the centrifugal of a glomerule, dehisce irregularly.

[5] Spec. 1. *S. velutina* Sch. bip.—Bak. *Mart. Fl. bras.* vi. p. ii. 150, t. 38.

[6] *Gen.* n. 934.—Cass. *Dict. sc. nat.* xv. 7, t. 487.—Less. *Syn.* 148.—DC. *Prodr.* v. 12.—Endl. *Gen.* n. 2200.—B. H. *Gen.* ii. 224, n. 4.—*Kahiria* Forsk. *Fl. æg.-arab.* 153.—*Pirarda* Adans. *Fam. des pl.* ii. 499.—*Leighia* Scop. *Introd.* n. 412 (ex Endl. not Cass.).

[7] Pink, lilac, or purplish.

[8] Resinously spotted between ribs.

[9] Spec. 2, 3. L. f. *Hort. ups.* t. 1.—Del. *Caill. Voy. Méroé*, 44, t. 3.—Lindl. *Bot. Reg.* t. 695.—Oliv. and Hiern, *Fl. trop. Afr.* iii. 262.—Boiss. *Fl. or.* iii. 153.—A. Rich. *Fl. abyss. Tent.* i. 372.—Sond. *Linnæa*, xxiii. 60.—Harv. and Sond. *Fl. cap.* iii. 47.—Klatt, *Ann. sc. nat.* sér. 5, xviii. 361.—Miq. *Fl. ind.-bat.* ii. 8.—Walp. *Rep.* ii. 538, 945; *Ann.* ii. 808.

[10] *Fl. austral.* iii. 460; *Gen.* ii. 227; *Hook. Icon.* t. 1006.

[11] "Bluish-purple."

or coarsely dentate; capitules[1] few, long-pedunculate; bracts of ovoid involucre ∞, subherbaceous unequal, ∞-seriate; receptacle flat and bare. (*Trop. Australia.*[2])

81? **Bothriocline** Oliv.[3]—Flowers[4] homomorphous, 5-merous (of *Vernonia*); fruit obovoid or turbinate, 4–5-costate, rounded at apex; pappus hairs few very caducous.—A glabrous tomentose herb, erect branched; leaves verticillate (3–4-nate) or opposite above, petiolate, dentate; capitules (moderate) corymbose; bracts of campanulate involucre unequal imbricate, ∞-seriate, herbaceous scarious-marginate, the interior dry; receptacle flat epaleaceous alveolate.[5] (*Trop. Africa.*[6])

82. **Lamprachænium** Benth.[7]—Flowers[8] nearly of *Vernonia*,[9] homomorphous; corolla tube thin elongate perceptibly dilated to a subcampanulate 5-fid limb. Anthers obtusely auriculate at base. Fruit obovoid glabrous polished scarcely compressed subenervate; pappus hairs ∞, short slightly scabrous caducous.[10]—An erect (odorous[11]) herb, rather rigidly short-pilose; leaves alternate petiolate dentate, white-tomentose beneath; capitules loosely cymose; peduncles slender; bracts of subglobular involucre ∞, unequal, ∞-seriately imbricate; the inner longer dryer more glabrous; receptacle small nearly flat obtusely foveolate. (*East. India.*[12])

83. **Centratherum** Cass.[13]—Flowers[14] 1-morphous; corolla tube thin straight or incurved; lobes of limb 5, narrow. Anthers obtusely auriculate at base. Style branches subulate hirtellate. Fruit obtuse, 4–10-costate;[15] crownlike paleæ of pappus com-

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[1] "Moderate."

[2] Spec. 1. *P. denticulata* Benth.

[3] *Hook. Icon.* t. 1133; *Fl. trop. Afr.* iii. 265.—B. H. *Gen.* ii. 226, n. 10.

[4] Purple? (nearly of *Vernonia*).

[5] A genus scarcely differing from *Vernonia*, except in habit and verticillate leaves.

[6] Spec. 1. *B. Schimperi* Oliv. and Hiern.

[7] *Gen.* ii. 225, n. 9.

[8] "Purplish?"

[9] To which it is closely allied, differing only in the form of the fruit.

[10] Few, red when dry.

[11] "Odour of *Chamomile*."

[12] Spec. 1. *L. microcephalum.*—*Decaneurum microcephalum* Dalz. *Hook. Kew Gard. Misc.* iii. 231.—Walp. *Ann.* v. 146.

[13] *Bull. Soc. philom.* [1817], 31; *Dict. sc. nat.* vii. 383, *Journ. Phys.* lxxxix. 24.—DC. *Prodr.* v. 70.—Endl. *Gen.* n. 2207.—B. H. *Gen.* ii. 225, 1231, n. 8.—*Ampherephis* H. B. K. *Nov. gen. et spec.* iv. 31, t. 314, 315.—*Spixia* Schr. *Pl. rar. Hort. monac.* t. 80 (ex DC. not Leandr.).—*Crantzia* Vell. *Fl. flum.* viii. t. 153 (not Leandr.).—*Phyllocephalum* Bl. *Bijdr.* 888.—*Rolfinkia* Zenk. *Pl. ind.* 13, t. 14.

[14] Violet or purplish.

[1] Often resinously glandular between ribs.

pressed ciliate, rather broad[1] (*Herderia*[2]) or narrower caducous, few or ∞, sometimes 0 (*Oiospermum*[3]).—Branching or diffuse herbs; leaves alternate, petiolate, often dentate; capitules pedunculate, solitary or corymbose-cymose; receptacle nearly flat or slightly concave, bare or foveolate, epaleaceous; bracts of broadly subcampanulate involucre unequal; the outer often foliaceous expanded; the inner generally shorter, rarely longer; some occasionally (*Herderia*) more or less deeply connate at base.[4] (*America*, *Africa*, *trop. Australia.*[5])

84? **Gutenbergia** Sch. bip.[6]—Flowers[7] (nearly of *Vernonia*) 1-morphous; limb of short tubular corolla acutely 5-fid. Anthers rather obtusely auriculate at base. Fruit unequally obovoid, obtuse at areolate apex; ribs 4–10, sometimes very obtuse, scarcely visible;[8] pappus 0.—Branching herbs; leaves alternate sometimes partly opposite, narrow penninerved; capitules (small or moderate) in loose ecorymbiform terminal cymes, sometimes solitary; involucre subhemispherical, campanulate or ovoid; bracts ∞, imbricate, ∞-seriate, subherbaceous or dry at margin; the outer gradually shorter; receptacle small nearly flat bare. (*Trop. Africa.*[9])

85. **Erlangea** Sch. bip.[10]—Flowers[11] (of *Vernonia*) 1-morphous; corolla tube thin; limb narrowly campanulate, linear-5-lobed. Anthers shortly pointed and coalite at base. Fruit (immature) obconical glandular shortly pilose, obscurely 4–5-angulate; pappus hairs few (to 5), 1-seriate, plumose, caducous.—Erect elongate hirsute herbs (annual?); leaves alternate narrow entire; capitules (moderate) in loosely corymbiform cymes, pedunculate; bracts of broadly campanulate involucre imbricate, ∞-seriate, dry, pubescent

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[1] Sometimes finally patulous.

[2] Cass. *Dict.* lx. 586, 599.—DC. *Prodr.* v. 13.—Endl. *Gen.* n. 2201.—B. H. *Gen.* ii. 232, n. 21.

[3] Less. *Linnæa*, iv. 339.—DC. *Prodr.* v. 11.—Endl. *Gen.* n. 2198.

[4] Sect. 3: 1. *Eucentratherum*; 2. *Oiospermum*; 3. *Herderia*.

[5] Spec. 8, 9. Link and Ott. *Ic. sel.* t. 29.—Reichb. *Ic. exot.* t. 127.—Sweet, *Brit. fl. Gard.* t. 225.—Wight, *Icon.* t. 1022 (*Decaneuron*).—DC. *Prodr.* v. 66; vii. 264 (*Decaneuron*).—Bak. *Mart. Fl. bras.* vi. p. ii. 9, t. 1 (*Oiospermum*), 11.—Deless. *Ic. sel.* iv. t. 2 (*Decaneuron*).—Benth. *Fl. austral.* iii. 460.—*Fl. brit. W.-Ind.* 354.—Oliv. and Hiern, *Fl. trop. Afr.* iii. 297 (*Herderia*).—Walp. *Ann.* i. 388; ii. 809 (*Herderia*).

[6] *Gedenkb. d. viert. Jubelf. d. Erfind. d. Buchdruck. in Mainz* [1840], 119, t. 4 (ex Walp. *Rep.* ii. 703).—B. H. *Gen.* ii. 224, n. 5.

[7] Pink or purplish (?).

[8] Very like those of *Lamprachænia* (from which it scarcely differs).

[9] Spec. about 7. A. Rich. *Fl. abyss.* i. 372 (*Ethulia*).—Benth. *Niger Fl.* 425 (*Oiospermum*).—Oliv. and Hiern, *Fl. trop. Afr.* iii. 263.—Walp. *Ann.* ii. 808 (*Oiospermum*).

[10] *Flora* (1853), 34.—B. H. *Gen.* ii. 225, n. 6.—*Jardinia* Sch. bip. ex Jard. *N. Ann. mar. et colon.* (1850–1851), 19 (not Steud.).

[11] "Purplish."

acute; the outer gradually smaller lanceolate; receptacle flat bare. (*Trop. west. Africa.*[1])

86. **Corymbium** L.[2]—Flowers[3] (nearly of *Vernonia*) solitary in glomerules; corolla tube thin; limb narrow 5-fid subinduplicate. Anthers obtusely auriculate at base. Style branches subulate papillose. Fruit subterete, truncate at apex; pappus pales short, at base more or less deeply connate in a cupule; exterior of fruit under pappus everywhere very densely villose.—Rigid herbs;[4] leaves all or partly basal, narrow rigid straight-nerved, on stem few or 0; capitules in dense or loose corymbiform terminal cymes; pedicels rather long or subnil; capitules composed of ∞ (1-flowered) glomerules; bracts 2, rigid, imbricate, elongate, approximate in tubular involucel; bracteoles 2, 3; the outer shorter, imbricate; receptacles minute.[5] (*South Africa.*[6])

87. **Lychnophora** Mart.[7]—Flowers[8] compound capitate; each single head 1-flowered.[9] Corollas 1-morphous, narrowly tubular; lobes of limb 5, narrow, valvate. Anthers at base obtusely or rather acutely auriculate. Style branches thin subulate hirtellate; disk epigynous various, formed of distinct glandules or sometimes externally sulcate.[10] Fruit 10-costate or 10-striate; pappus pales more or less twisted; or few narrow caducous, uniform (*Haplostephium*[11]), or 2-morphous; the inner narrow, caducous; the outer shorter, persistent (*Eulychnophora*). Central fruit sometimes (*Lychnophoriopsis*[12]) turbinate highly villose; the others 10-costate; all crowned with 2-seriate pappus.—Shrubs or small trees; leaves alternate, entire flat, tomentose or lanate or oftener narrow heathlike linear-revolute; capitules sessile at ends of branches and more or less supported by uppermost leaves, globular

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[1] Spec. 1. *E. plumosa* Sch. bip.—Oliv. and Hiern, *Fl. trop. Afr.* iii. 265.

[2] *Gen.* n. 1004.—Lamk, *Ill.* t. 723.—Gærtn. *Fruct.* ii. 42, t. 86.—Less. *Syn.* 150.—DC. *Prodr.* v. 88.—Endl. *Gen.* n. 2233.—B. H. *Gen.* ii. 234, n. 29.—*Contarena* Adans. *Fam. des pl.* ii. 120.

[3] Pink, white, or (?) light ochre.

[4] With the habit of some *Monocotyledons.*

[5] A genus, by its 1-flowered glomerules, somewhat analogous in the series to *Gundelia* in the *Carduecæ.*

[6] Spec. 6, 7. Thunb. *Fl. cap.* 729.—Harv. *Thes. cap.* t. 69; *Fl. cap.* iii. 55.

[7] *Denkschr. Bot. Ges. Regensb.* ii. 148, t. 4–10.—DC. *Prodr.* v. 79.—Less. *Linnæa,* iv. 316.—Endl. *Gen.* n. 2223.—B. H. *Gen.* ii. 235, n. 31.—*Lychnocephalus* Mart. *DC. Prodr.* v. 83.—*Piptocoma* Less. *Linnæa,* iv. 315.—DC. *Prodr.* v. 74, n. 2 (not Cass.).

[8] White (?).

[9] Like *Corymbium.*

[10] *Haplostephio,* etc.

[11] Mart. *DC. Prodr.* v. 78.—Sch. bip. *Pollichia* (1863), 373.—B. H. *Gen.* ii. 234, n. 30.

[12] Sch. bip. *loc. cit.* 375.—B. H. *Gen.* ii. 235, n. 32.

or hemispherical; each bearing small heads inserted on a thick common receptacle; bracts of common involucre ∞, imbricate, ∞-seriate, dry pointed, sometimes villose at back; the outer gradually smaller; receptacle of small heads small, sometimes foveolate.[1] (*Trop. and subtrop. Brazil.*[2])

88. **Chresta** Arrab.[3]—Flowers[4] nearly of *Albertinia;* anthers obtusely auriculate at base. Fruit longitudinally striate or 10-costate, glabrous (*Sphærophora*[5]) or oftener villose; ribs sometimes 2–4, prominent; apex truncate; hairs of persistent pappus 2–many-seriate dissimilar; the outer paleaceous, sometimes narrow or very short, the inner generally longer and narrower.—Tall shrubs, or with stem short, or thick woody (*Prestelia*[6]), or very short subshrubby (*Pycnocephalum*[7]); leaves alternate, petiolate or subsessile, entire or dentate, sometimes elongate-subensiform (*Pycnocephalum*), on both sides or beneath hoary-tomentose or lanate; capitules solitary either in short or elongate (*Pycnocephalum*) peduncle, or oftener in corymbiform cymes; each one compound; common involucre various; each separate head in its own involucel, ∞-bracteate, ovoid or oblong, 1 or few-flowered; florescence variously centrifugal (not centripetal); individual receptacles small and bare; general receptacle subglobular or more rarely (*Stachyanthus*[8]) oblong or elongate spikelike.[9] (*Brazil.*[10])

89. **Pithecoseris** Mart.[11] — Flowers 1-morphous, compound capitate; corolla tube thin; limb narrowly 5-fid. Anthers rather obtusely auriculate at base. Fruit 2-morphous (all fertile) papposе; some elongate glabrous, 10-costate; pappus hairs elongate

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[1] Sect. 4: 1. *Eulychnophora;* 2. *Lychnophoriopsis;* 3. *Haplostephium;* 4. *Lycnocephalus* (leaves petiolate nearly flat).

[2] Spec. about 20. Bak. *Mart. Fl. bras.* vi. p. ii. 147 (*Lychnophoriopsis*), 148, t. 37 (*Haplostephium*), 150, t. 39–42.—Sch. bip. *Pollichia* (1863), 339.—Walp. *Rep.* vi. 99.

[3] Ex Velloz. *Fl. flum.* viii. t. 150, 151 (1827). — DC. *Prodr.* v. 85. — Endl. *Gen.* n. 2230.—H. Bn. *Bull. Soc. Linn. Par.* 279.—*Eremanthus* Less. *Linnæa*, iv. (1829), 317; vi. 682; *Syn.* 147 (not Cass.).—B. H. *Gen.* ii. 235, n. 33.

[4] "Purplish."

[5] Sch. bip. *Pollichia* (1863), 402.

[6] Sch. bip. herb. (ex B. H.).

[7] DC. *Prodr.* v. 83.

[8] DC. *Prodr.* v. 84.

[9] Sect. 5: 1. *Euchresta* (incl. *Erementho*, the capitule of which is only smaller); 2. *Prestelia;* 3. *Pycnocephalum;* 4. *Sphærophora;* 5. *Stachyanthus.* To *Euchresta* belongs the genus *Vanillosmopsis;* the same in habit and inflorescence, differing only in form of pappus.

[10] Spec. about 15. DC. *Prodr.* v. 82 (*Albertiniæ*, § 2).—Delfss. *Ic. sel.* iv. t. 6.—Hook. *Lond. Journ.* i. t. 8, 9.—Sch. bip. *Pollichia* (1861), 164; (1863), 393 (*Eremanthus*).—Bak. *Mart. Fl. bras.* vi. p. ii. 160, t. 43–47 (*Eremanthus*).—Walp. *Rep.* ii. 542; vi. 102.

[11] Ex DC. *Prodr.* v. 84. — Endl. *Gen.* n. 2228.—B. H. *Gen.* ii. 236, n. 34.

very slightly unequal, very caducous; others short angular pubescent; pappus hairs 2-morphous; longer persistent.—A tall herb;[1] hair thin; leaves (full) alternate, lyrately or sinuately pinnatifid, membranous; capitules very long-stipitate; common receptacle elongate spikelike; individual receptacles small bare; bracts of oblong involucre ∞, sometimes subscarious, ∞-seriately imbricate. (*Brazil.*[2])

90. **Spiracantha** H. B. K.[3])—Flowers[4] 1-morphous, compound capitate; heads (very small) 1-flowered. Corolla shortly tubular; limb short, 4–5-fid. Anthers shortly and obtusely auriculate at base. Style branches subulate hirtellate, scarcely separate above. Fruit subterete, thinly costate, obtuse at apex, glabrous; pappus hairs ∞, unequal, shortly subpaleaceous, caducous.—A weak shrub; leaves alternate, penninerved, canescent beneath; capitules (small) shortly cymose in axils of leaves, and leaves 1, 2, smaller, spinescent at apex, involute; common receptacle shortly ovoid; receptacle of single heads minute; involucel 2-bracteate; outer heads axillate to bracts and with them more or less connate within and raised. (*Columbia.*[5])

91. **Rolandra** Rottb.[6]—Flowers[7] 1-morphous in capitules composed of 1-flowered heads; corolla tube thin; limb 5- or more rarely 3–4-fid. Anthers rather long articulate at base. Style, &c., of *Spiracantha*. Fruit 4–5-angular glabrous glandular, annulate-umbilicate at truncate apex; pales of (very small) pappus in a very short lacerate crown.—Shrub or undershrub; leaves alternate penninerved, whitish beneath; capitules sessile between uppermost leaves of branches subglobular; bracts shortly aristate-echinate; receptacle of single heads minute; involucels numerous; single flowers enclosed in enveloping bracts.[8] (*Trop. America.*[9])

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[1] With the habit of some *Cichorieæ*.

[2] Spec. 1. *P. pacourinoides* Mart.—Bak. *Mart. Fl. bras.* vi. p. ii. 147, t. 36.

[3] *Nov. gen. et spec.* iv. 28, t. 313.—Less. *Syn.* 150.—DC. *Prodr.* v. 90.—Endl. *Gen.* n. 2235.—B. H. *Gen.* ii. 237, n. 40.

[4] "Purple."

[5] Spec. 1. *S. cornifolia* H. B. K.—*Acosta Rolandræ* DC. mss.

[6] *Soc. med. hafn. Collect.* ii. 256.—Cass. *Dict. sc. nat.* xlvi. 170.—Less. *Syn.* 150.—DC. *Prodr.* v. 90.—Endl. *Gen.* n. 2234.—B. H. *Gen.* ii. 237, n. 39.

[7] White.

[8] Very near *Spiracantha*, differing in habit and chiefly in pappus.

[9] Spec. 1. *R. argentea* Rottb.—Sw. *Fl. ind. occ.* t. 27.—Griseb. *Fl. brit. W.-Ind.* 355.—*Echinops fruticosus* L. *Spec.* 815.—*E. nodiflorus* Lamk, *Dict.* ii. 337, n. 6.

92. **Elephantopus** L.[1]—Flowers compound capitate; heads few- (1–5-) flowered; corolla tube thin; lobes of limb 4, 5, equal or oftener somewhat unequal; the interior a little longer. Anthers obtusely auriculate at base. Style branches subulate, glabrous, or minutely hirtellate. Fruit 10-costate, truncate at apex; pappus hairs rigid, thin or more or less paleaceous-dilated to base.[2]—Perennial herbs; variously clothed; leaves alternate, entire or dentate, sometimes sinuately pinnatifid to base of plant, penninerved; capitules solitary or cymose, pedunculate, sometimes subtended by a more or less deformed leaf; common receptacle globular or more or less elongate; receptacle of separate heads minute, bare or foveolate; bracts of compressed involucre ∞, oftener 2-seriately imbricate, unequal, often dry subpaleaceous; capitules rarely (*Distreptus*[3]) few-headed and arranged along a spikelike and foliate axis.[4] (*All trop. regions.*[5])

93? **Tetmatophila** Mart.[6]—Flowers 1-morphous in compound capitules; single heads few- (4-) flowered. Corolla tube thin; limb narrowly 5-fid. Anthers obtusely auriculate at base. Style branches subulate hirtellate. Fruit 10-costate pubescent, truncate at apex; pales of pappus very unequal, sub-1-seriate.—A small climbing villose (marshy) herb; leaves alternate, sessile, remotely denticulate; capitules (small) sessile axillate, with spinescent stipate bracts; receptacle of single heads small bare; bracts of narrow involucre imbricate few-seriate, 2-morphous; the interior scarious; the exterior larger spinescent.[8] (*Brazil.*[9])

94. **Sparganophorus** Vaill.[10]—Flowers[11] regular, 1-morphous; corolla tube thin; limb valvate, 2–5-fid. Anthers acuminately

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[1] *Gen.* n. 997.—Gærtn. *Fruct.* ii. 414.—DC. *Prodr.* v. 85.—Endl. *Gen.* n. 2231.—B. H. *Gen.* ii. 237, n. 38.—*Elephantosis* Less. *Linnæa*, iv. 322.—DC. *Prodr.* v. 87.—? *Matamoria* Ll. and Lex. *Nov. Gen.* i. 8.

[2] Sometimes 2-morphous in the same capitule; hairs in *Distreptus* 2–4 elongate and more or less contorted.

[3] Cass. *Bull. Soc. philom.* [1817], 66; *Dict. sc. nat.* xiii. 366.—Less. *Syn.* 149.—DC. *Prodr.* v. 87.

[4] Sect. 2: 1. *Euelephantopus*; 2. *Distreptus*.

[5] Spec. about 10. Desvx, *Ham. Fl. ind. occ.* 52.—Wight, *Icon.* t. 1086.—Bertol. *Bot. Misc.* xi. t. 5.—A. Gray, *Man.* (ed. 1856), 184.—Chapm. *Fl. S. Unit. St.* 188.—Benth. *Fl. austral.* iii. 461.—Griseb. *Fl. brit. W.-Ind.* 354.—Miq. *Fl. ind.-bat.* ii. 21.—Oliv. and Hiern, *Fl. trop. Afr.* iii. 298.—Bak. *Mart. Fl. bras.* vi. p. ii. 172, t. 49, 50.—Walp. *Rep.* vi. 102, 703; *Ann.* i. 390.

[6] Ex Bak. *Mart. Fl. bras.* vi. p. ii. 176, t. 48.—B. H. *Gen.* ii. 236, n. 37.

[7] "Rosei, apice barbati."

[8] A plant (unknown to us) apparently allied to *Sparganophorus* rather than to *Soaresia* or *Chronopappus*.

[9] Spec. 1. *T. Scolymastrum* Mart.

[10] *Act. Acad. Par.* [1718], 368.—Gærtn. *Fruct.* ii. 396, t. 165.—Cass. *Dict.* l. 71.—Less. *Linnæa*, iv. 335; *Syn.* 147.—DC. *Prodr.* v. 12.—Endl. *Gen.* n. 2199.—B. H. *Gen.* ii. 223, n. 1.—*Struchium* P. Br. *Jam.* 312, t. 34, fig. 2.—*Athenæa* Adans. *Fam. des pl.* 121.

[11] Very small, purple.

auriculate at base. Style branches subulate hirtellate. Fruit angularly costate, between the ribs (3, 4) glandular, crowned with a dishlike dentate cupule.—An annual; leaves alternate, petiolate, subentire or variously dentate, penninerved; capitules axillate or lateral, glomerulate or solitary; bracts of subhemispherical involucre ∞, unequal, imbricate, ∞-seriate, dry generally towards apex and margin; the inner gradually shorter. (*Trop. America and Africa, Madagascar.*[1])

95. **Pacourina** Aubl.[2]—Flowers[3] regular, 1-morphous; corolla tube narrow, dilated at base; lobes of limb 5, narrow, valvate. Anthers acutely or rather obtusely auriculate at base. Style branches hirtellate, long subulate. Fruit elongate; ribs to 10, slightly prominent; between ribs glandular and crowned with a disklike subcartilaginous ring, entire or dentate.—Glabrous aquatic herbs; leaves alternate (full); limb penninerved more or less denticulate; petiole dilated decurrent or amplexicaul; capitules (large) lateral or nearly opposite leaves (cymose); bracts of broad and depressed open involucre ∞, -unequal, ∞-seriately imbricate, dry or subherbaceous at apex; the outer gradually smaller; receptacle nearly flat bare. (*Trop. and subtrop. Central America.*[4])

96? **Stokesia** Lhér.[5]—Flowers[6] irregular, 1-morphous; corolla shortly tubular at base; limb unequally ligulate, more or less open, 5-fid at apex, valvate. Anthers shortly and obtusely auriculate at base. Style branches subulate hirtellate. Fruit 3–4-angled, truncate at apex, scarcely costate; pappus hairs 4, 5, elongately lanceolate, caducous.—An erect herb, more or less canescent-lanate; leaves alternate, entire or spinulose-ciliate; the lower petiolate; the upper sessile or amplexicaul; capitules (large) terminal stipitate; bracts of depressed globular involucre ∞, dissimilar, ∞-seriately imbricate; the outer foliaceous, more or less spinulose; the inner narrower elongate long ciliate; receptacle nearly flat bare.[1] (*N. America.*[2])

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[1] Spec. 1. *S. Vaillantii* Gærtn.—Pers. *Enchir.* ii. 398.—Griseb. *Fl. brit. W.-Ind.* 352.—Bak. *Mart. Fl. bras.* vi. p. ii. 7.—Oliv. and Hiern. *Fl. trop. Afr.* iii. 262.—*S. Struchium* Pers. *loc. cit.*—*S. africanus* Steud. *Nom.* 801.—*Ethulia sparganophora* L. *Spec.* 1171.—*E. Struthium* Sw. *Fl. ind. occ.* 1297.—*Struthium americanum* Poir. *Dict.* vii. 475.—*S. africanum* P. Beauv. *Fl. ow. et ben.* i. 81, t. 48.

[2] *Guian.* ii. 800, t. 316. -DC. *Prodr.* v. 14.—Endl. *Gen.* n. 2202.—B. H. *Gen.* ii. 224, n. 2.—*Meisteria* Scop. *Introd.* n. 383.—*Haynea* W. *Spec.* iii. 1787.—*Pacourinopsis* Cass. *Bull. Soc. philom.* (1817), 151; *Dict.* xxxvii. 212.

[3] "Purplish."

[4] Spec. 2. H. B. K. *Nov. gen. et spec.* iv. 23.—Bak. *Mart. Fl. bras.* vi. p. ii. 8.

[5] *Sert. angl.* (1788), 27.—Cass. *Dict.* li. 64.—Less. *Linnæa*, iv. 321; *Syn.* 148.—DC. *Ann. Mus.* xvi. 154; *Prodr.* v. 71.—Endl. *Gen.* n. 2209.—B. H. *Gen.* ii. 234, n. 28.—*Cartesia* Cass. *Bull. Soc. philom.* [1816], 198; *Dict.* vii. 157.

[6] Pale bluish, handsome.

97. **Eupatorium** T.[3]—Flowers[4] regular homomorphous hermaphrodite fertile; corolla tube thin; limb not at all or slightly expanded, sometimes narrow campanulate, 5-dentate or 5-lobed, valvate. Anthers appendiculate at apex; appendage sometimes short or 0; obtuse and entire at base. Fruit truncate at apex, 5-costate or, from more or less prominent secondary nerves, 7–10-costate. Style generally suddenly attenuated and subfiliform at base;[5] pappus hairs ∞, 1-seriate, rather stiff or soft, entire, scabrous, more or less long barbellate or plumose, more rarely few (5-10), or more or less paleaceous-dilated or short, or sometimes 0.—Shrubs, undershrubs, or annual or perennial herbs, sometimes climbing and twining; leaves opposite or more rarely alternate, entire, dentate or sometimes dissected; capitules[6] in corymbiform cymes or in more or less branched cymiferous racemes, sometimes solitary and long stipitate; bracts of oblong, ovoid, subtubular, campanulate or subhemispherical involucre ∞, sometimes few, few- or ∞-seriately imbricate, equal, or outer gradually smaller; receptacle nearly flat or more or less convex bare,[7] very minutely foveolate.[8]

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[1] A genus quite anomalous among the *Vernoniceæ* by its ligulate corolla.

[2] Spec. 1, cultivated in gardens as *S. cyanea* Lhér.—Torr. and Gr. *Fl. N.-Amer.* iii. 60.—*Bot. Mag.* t. 4966.—*Carthamus lævis* Hill, *Hort. kew.* 57, t. 5.—*Cartesia centauroides* Cass.—*Carthamus carolinianus* Michx. herb. (ex DC.).—*Centaurea americana* Hook. *Comp. to Bot. Mag.* i. 48 (not Nutt.).

[3] *Inst.* 455, t. 259.—J. *Gen.* n. 935.—DC. *Prodr.* v. 141; vii. 268.—Endl. *Gen.* n. 2280.—B. H. *Gen.* ii. 245, n. 66.—*Kyrstenia* Neck. *Elem.* i. 81.—*Gyptis* Cass. *Dict.* xx. 177.—*Coleosanthus* Cass. *Dict.* x. 36.—*Praxelis* Cass. *Dict.* xliii. 261.—*Ooclinium* DC. *Prodr.* v. 133.—*Conoclinium* DC. *Prodr.* v. 135.—*Campuloclinium* DC. *Prodr.* v. 136.—*Hebeclinium* DC. *Prodr.* v. 136.—Endl. *Gen.* n. 2276.—*Chromolæna* DC. *Prodr.* v. 133.—Endl. *Gen.* n. 2273.—*Disynaphia* DC. *Prodr.* vii. 267.—? *Batschia* Mœnch, *Meth.* 567.—*Critonia* P. Br.—DC. *Prodr.* v. 140.—Endl. *Gen.* n. 2279.—*Wikstræmia* Spreng. *Syst.* iii. 434.—*Osmia* Sch. bip. herb.—*Heterolæna* Sch. bip. herb. (ex B. H.).—*Bulbostylis* Gardn. *Hook. Lond. Journ.* v. 467 (not DC.).

[4] White, pale yellow, ochrous, pink, purplish or bluish: sometimes variously scented.

[5] Rarely 3–5-branched (H. Bn. *Bull. Soc. Linn. Par.* 277).

[6] Small, many-flowered or often few- (1–4-) flowered.

[7] Or sometimes very closely punctulated.

[8] Sections of the genus are:

Dissothrix A. Gray, *Hook. Kew Journ.* iii. 223, t. 5.—B. H. *Gen.* 242, n. 57: stem herbaceous, erect; involucral bracts ∞; pappus hairs ∞, of which 5, 6, larger and longer than the rest.

Brickellia Ell. ex Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 287.—B. H. *Gen.* ii. 247, n. 70.—*Coleosanthus* Cass. (part.).—*Clavigera* DC. *Prodr.* v. 127.—Deless. *Ic. sel.* iv. t. 12.—*Bulbostylis* DC.—*Prodr.* v. 138.—? *Rosalesia* Ll. and Lex. *Nov. veg.* i. 9: stem herbaceous or subshrubby; leaves opposite or alternate; anthers appendiculate; fruit 10-striate or costate; pappus hairs scabrous, barbellate or shortly plumose; capitules 3-∞-flowered.

Mikania W. *Spec.* iii. 1742.—DC. *Prodr.* v. 187; vii. 270.—Endl. *Gen.* n. 2282.—B. H. *Gen.* ii. 246, n. 67.—*Willugbæya* Neck. *Elem.*

(All temp. and warm trop. and subtrop. or rarely northern regions[1] of the world.[2])

i. 82.—? *Corynanthelium* Kze, *Linnæa*, xx. 19 : capitules generally 4-flowered, more rarely 3–5-flowered; involucral bracts few (4 or 3, 5); fruit 5-angular; pappus hairs scabrous or very shortly barbellate; stem oftener twining, more rarely erect; leaves opposite. American; 1 African and Asiatic.

Kanimia Gardn. *Hook. Lond. Journ.* vi. 446. —B. H. *Gen.* ii. 246, n. 68 : involucral bracts oftener 4–6; flowers generally 4; fruit 8–10 costate; pappus of *Mikania;* stem erect or subscandent, herbaceous or subshrubby; leaves opposite and alternate. (*Trop. America.*)

Agrianthus Mart. *DC. Prodr.* v. 125.—Endl. *Gen.* n. 2267.—B. H. *Gen.* ii. 244, n. 64 : fruit 5-costate; pappus hairs unequal, short or long, somewhat rigid or compressed, barbellate, ciliate or subplumose; stem shrubby; leaves crowded linear, rather prominently 3-nerved or subcarinate. (*Brazil.*)

Trichogonia DC. *Prodr.* v. 126 (sect. of *Kuhnia*).—Gardn. *Hook. Lond. Journ.* v. 459. —B. H. *Gen.* ii. 243, n. 61 : pappus hairs ∞, plumose or (in the same plant) very short entire or 0; stem herbaceous or shrubby; cymes of capitules corymbiform; other characters quite of *Eupatorium.* (*S. America.*)

Symphyopappus Turcz *Bull. Mosc.* (1848), i. 583.—B. H. *Gen.* ii. 244, n. 65 : fruit 5-10-angular; pappus hairs rather rigid, subsimple or barbellate; capitules few- or ∞-flowered; stem shrubby, sometimes glutinous; leaves alternate or opposite, coriaceous venose, often dentate; inflorescence corymbiform. (*Brazil.*)

Carelia Less. *Syn.* 156 (not Adans.).—DC. *Prodr.* v. 125.—Endl. *Gen.* n. 2266 : fruit 5-costate; pappus pales entire short obtuse, sub-2-seriate; stem shrubby; leaves opposite, somewhat tomentose rugose. (*Brasil*)

? *Leptoclinium* Gardn. *Hook. Lond. Journ.* v. 461 (sect. of *Liatris*).—B. H. *Gen.* ii. 244, n. 63 : fruit 5–8-angular; pappus hairs ∞, 1-seriate, ciliate or barbellate, caducous; stem shrubby; leaves alternate crowded; cymes corymbiform. (*Brazil.*)

Decachæta DC. *Prodr.* v. 133 (not Gardn.). —Deless. *Ic. sel.* iv. t. 13.—Endl. *Gen.* n. 2272.—B. H. *Gen.* ii. 238, n. 43 : anthers not or scarcely appendiculate; fruit 5-angular hard basal or subbasal; pappus hairs 5–10, sometimes more or less paleaceous; stem subshrubby; leaves alternate or opposite, entire or dentate. (*Mexico and Centr. America.*) A sect., like *Carelia*, connecting *Eupatorium* with *Ageratum.*

Ophryosporus Meyen, *Reis.* i. 402. — DC. *Prodr.* vii. 260.—Endl. *Gen.* n. 3032[10].—B. H. *Gen.* ii. 239, n. 44 : anthers not appendiculate; fruit smooth between ribs (5); pappus hairs ∞, barbellate or shortly plumose; stem shrubby; leaves alternate or opposite, incised or dentate; capitules very numerous in compound-branched cymes. (*Trop. N. and S. America.*)

Phania DC. *Prodr.* v. 114 (part.).—Endl. *Gen.* n. 2263.—B. H. *Gen.* ii. 238, n. 42.—*Phalacræa* DC. *Prodr.* v. 105.—Deless *Ic. sel.* iv. t. 8 : anthers not or scarcely appendiculate; fruit 5-angled, smooth between ribs; pappus hairs few (to 5) paleaceous-compressed unequally lacerate; stem herbaceous, erect or creeping; leaves opposite, 3-sected or incised-dentate. (*Antilles.*) A sect. connecting the genus with *Ageratum.*

Piqueria Cav. *Icon.* iii. 18, t. 235.—Less. *Syn.* 154.—DC. *Prodr.* v. 104.—Endl. *Gen.* n. 2253.—B. H. *Gen.* ii. 238, n. 41.—*Phalacræa* DC. *Prodr.* v. 104.—Deless. *Ic. sel.* iv. t. 8.— Endl. *Gen.* n. 2255 : anthers inappendiculate at apex; fruit smooth, 5-costate; pappus hairs shortly paleaceous, very short or 0; capitules 3–5-flowered or oftener ∞-flowered. (*West. N. and S. America.*)

Podophania (H. Bn, *Bull. Soc. Linn. Par.* 268) : anthers inappendiculate; fruit 5-costate; ribs ciliate; pappus hairs ∞, thin scabrous; capitules patulous, ∞-flowered; involucre ∞-bracteate; leaves alternate, decompound-3–4-pinnate; capitules long-pedunculate, terminal solitary or spuriously lateral few. (*Mexico.*)

? *Helogyne* Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 449.—B. H. *Gen.* ii. 239, n. 45 : anthers inappendiculate; fruit 5-costate, smooth between ribs; stem herbaceous (?); leaves alternate, entire or dentate at apex; outer involucral bracts herbaceous longer (*Peru*). A plant (unknown to us) apparently hardly separable from *Ophryosporus.*

Mallotopus japonicus Franch. (*Enum. pl. jap.* ii. 394) apparently a sect. of *Eupatorium;* peduncle thickened more or less villose.

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[1] Said to be foreign in Australia.

[2] Spec. about 500. Jacq. *Hort. vindob.* t. 161; *Hort. schœnbr.* iii. t. 369; *Ic. rar.* t. 170.— Jacq. f. *Ecl. am.* t. 48 (*Piqueria*).—Vent. *Jard. Malm.* t. 3.—B. *Jard. Malm.* t. 14.— Vahl, *Symb.* iii. t. 73.—H. B. K. *Nov. gen. et spec.* iv. t. 340–349.—Sm. *Ic. pl. ined.* t. 67–70. —Torr. *Fl. N.-York*, i. t. 48.—A. Gray, *Man.* (ed. 1856), 186; 188 (*Mikania, Conoclinium*); *Emor. Exp. Bot.* 75.—Chapm. *Fl. S. Unit. St.* 193; 197 (*Mikania*).—A. Rich. *Fl. cub.* t. 50. —Wedd. *Chl. andin.* i. 215, t. 40.—Bertol.

98. **Ageratum** L.[1]—Flowers[2] nearly of *Eupatorium*, 1-morphous; anthers appendiculate above, obtuse at base. Fruit 5-angled or very rarely with 2, 3 thin secondary ribs; pappus hairs short paleaceous, free or connate at base, 1-seriate, or 5, equal or unequal, more rarely long aristate, or 10–20; some shorter or very short, sometimes very narrow.—Erect herbs, sometimes frutescent; leaves opposite or partly alternate; capitules[3] in loose compound branched or corymbiform cymes; receptacle flat or rather convex, bare or sparsely paleaceous; bracts of subcampanulate involucre equal or unequal, 2–3-seriately imbricate. (*All*[4] *warm and temp. reg.*[5])

99? **Hofmeisteria** Walp.[6]—Flowers (nearly of *Eupatorium*) 1-morphous; lobes of subtubular corolla 5, valvate. Anthers appendiculate at apex. Fruit 5-angled; pappus hairs 2–15, alternating with nearly as many short pales sometimes adnate to hairs. Other characters of *Eupatorium*.—Undershrubs; leaves opposite, or the upper alternate, lobed or dissected; capitules long pedunculate; receptacle flat or slightly convex, minutely alveolate; bracts of broadly campanulate involucre ∞, unequal imbricate; the outer gradually shorter.[7] (*California*.[8])

Misc. v. t. 5, 6; vi. t. 1.—Miq. *St. surin.* t. 54; *Fl. ind.-bat.* ii. 26; *Ann. Mus. lugd.-bat.* iii. 167.—Field, *Sert. pl.* t. 5.—Phil. *Fl. atacam.* 29; *Linnæa* xxxiii. 128.—Remy, *C. Gay Fl. chil.* iii. 472; 477 (*Piqueria*), 480 (*Ophryosporus*).—Bak. *Mart. Fl. bras.* vi. p. ii. 186, t. 53 (*Ophryosporus*), 193 (*Carelia*), 212 (*Trichogonia*), 217, t. 61–72 (*Mikania*), 271, t. 73 (*Dissotrix*), 274, t. 76–96; 365, t. 97, 98 (*Symphyopappus*), 368, t. 99; 100 (*Kanimia*), 372, t. 101, 102 (*Brickellia*).—Griseb. *Fl. brit. W.-Ind.* 356 (*Brickellia, Hebeclinium*), 357, 362 (*Critonia, Mikania*); *Symb. Fl. argent.* 168, 173 (*Ophryosporus, Mikania*).—Fr. et Sav. *Enum. pl. jap.* i. 219.—Klatt. *Ann. sc. nat.* sér. 5, xviii. 364.—Oliv. and Hiern. *Fl. trop. Afr.* iii. 300; 301 (*Mikania*).—Harv. and Sond. *Fl. cap.* iii. 58 (*Mikania*).—Benth. *Fl. austral.* iii. 461.—Boiss. *Fl. or.* iii. 154.—Reichb. *Ic. Fl. germ.* xvi. t. 892.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 27.—Gren. et Godr. *Fl. de Fr.* ii. 85.—*Bot. Reg.* t. 1723.—*Bot. Mag.* t. 2650 (*Piqueria*).—Walp. *Rep.* ii. 553; vi. 105 (*Piqueria*), 107 (*Helogyne*), 108 (*Conoclinium, Hebeclinium*), 109; 114 (*Mikania*), 117 (*Brickellia*); *Ann.* i. 393 (*Piqueria*), 397 (*Chromolæna, Ooclinium, Conoclinium*), 398; 403 (*Kanimia, Mikania*); ii. 816, 817 (*Symphyopappus, Mikania*), 819 (*Brickellia*); v. 162 (*Conoclinium*), 164; 168 (*Mikania*), 169 (*Brickellia*).

[1] *Gen.* n. 936.—Lamk. *Ill.* t. 672.—Gærtn. *Fruct.* iii. 398.—DC. *Prodr.* v. 108.—Endl. *Gen.* n. 2259.—B. H. *Gen.* ii. 241, n. 54.—*Cœlestina* Cass. *Dict. sc. nat.* vi. Suppl. 8, t. 93.—DC. *Prodr.* v. 107.—Endl. *Gen.* n. 2258 (*Cœlestinia*).—? *Oxylobus* Sess. et Moc. *Fl. mex. ined.* ex DC. *Prodr.* v. 115.—*Decachæta* Gardn. *Hook. Lond. Journ.* v. 462 (not DC.).

[2] White, bluish, or sometimes purplish.

[3] Small or moderate.

[4] All, except 1 species, dispersed through all regions of the old world. American.

[5] Spec. about 15. Cav. *Ic.* t. 357.—Hook. *Ex. Fl.* t. 15.—Sweet, *Brit. fl. Gard.* t. 89.—Wawr. *Pr. Maxim. Reis. Bot.* t. 76.—Benth. *Fl. austral.* iii. 462.—Griseb. *Fl. brit. W.-Ind.* 356.—Miq. *Fl. ind.-bat.* ii. 22.—Bak. *Mart. Fl. bras.* vi. p. ii. 193, t. 54, fig. 1.—Regl. *Gartenfl.* t. 108.—*Bot. Mag.* t. 1730, 2524.—Walp. *Rep.* ii. 545 (*Cœlestina*); *Ann.* i. 395; v. 152 (*Cœlestina*), 153.

[6] *Rep.* vi. 106.—B. H. *Gen.* ii. 243, n. 59.—*Helogyne* Benth. *Sulph. Bot.* 20, t. 14 (not Nutt.).

[7] ? Rather a sect. of *Eupatorium*.

[8] Spec. 2. Torr. *Wippl. Exped. Bot.* 96, t. 9.

100? **Aschenbornia** Schau.[1]—Flowers 1-morphous; corolla limb campanulate. Anthers appendiculate. Fruit sub-4-angled; pales of pappus to 15, free membranous obtuse subpectinately fimbriate.—A shrub; branches hirtellate; leaves opposite, petiolate, 3-plinerved, coarsely serrate, resinous beneath; capitules few corymbose; receptacle subconical, membrano-paleaceous between the flowers; bracts of subcylindrical involucre ∞, imbricate.[2] (*Mexico.*[3])

101. **Adenostemma** Forst.[4]—Flowers[5] (nearly of *Eupatorium*) 1-morphous; corolla tube oftener short; limb more or less broadly campanulate; lobes or teeth 5, valvate. Anthers exappendiculate at apex or more rarely shortly glandular- or membranous-appendiculate. Style branches more or less dilated at apex, sometimes very complanate or subpetaloid. Fruit 5-angled or 5-costate, often glandular-tuberculate between ribs; pappus hairs few, oftener short stiff, clavate or more or less paleaceously dilated, ciliate or lacerate, sometimes very short or connate in a crenate or sinuate ring, or 0.—Glabrous or glandular-pilose, sometimes subshrubby herbs, often suddenly radicant at base; leaves opposite or more rarely alternate, petiolate or subsessile, entire or crenate, dentate or incised, 1–3-plinerved; capitules solitary, 2-nate or oftener in cymes; bracts of subhemispherical or subcampanulate involucre ∞, unequal, 1-∞-seriate, sometimes more or less connate; receptacle flat or more or less deeply conical, either bare, or more rarely sparsely paleaceous.[6] (*Asia, Africa, Oceania, trop. and subtrop. America.*[7]) [For foot-note, see next page.]

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[1] *Linnæa*, xix. 716. — B. H. *Gen.* ii. 241, n. 53.

[2] A genus unknown to us; ? a species of *Alonia ?*

[3] Spec. 1. *A. heteropoda* Schau. — Walp. *Ann.* i. 395.

[4] *Char. gen.* (1776), 89, t. 45.—J. *Gen.* 184. —DC. *Prodr.* v. 110; vii. 266.—Delêss. *Ic. sel.* iv. t. 10.—Endl. *Gen.* n. 2261.—B. H. *Gen.* ii. 239, n. 47.—*Lavenia* Sw. *Fl. ind. occ.* 1329. —*Trichogonia* Gardn. *Hook. Lond. Journ.* v. 459 (part.).

[5] Minute, generally white.

[6] Sections of this genus are:

Tuberostyles Steetz, *Seem. Her. Bot.* 142, t. 29.—B. H. *Gen.* ii. 241, n. 51: receptacle convex bare; involucral bracts coriaceous very unequal; pappus pales very short and connate in a very short crenate crown, or 0; stem herbaceous creeping radicant; leaves opposite crenate (*N. Granada*).

Alomia H. B. K. *Nov. gen. et spec.* iv. 151, 312, t. 354.—Less. *Syn.* 154.—DC. *Prodr.* v. 105.—Endl. *Gen.* n. 2254.—B. H. *Gen.* ii. 240, n. 49.—? *Lycapsus* Phil. *Bot. Zeit.* (1870), 499, t. 8: receptacle short- or long-conical, bare or with narrow pales between the flowers; fruit 4–5-gonal; pappus coroniform (*Tuberostyles*), or 0; limb of corolla more or less broadly campanulate; stem herbaceous or subshrubby erect branched; leaves opposite or partly alternate, entire or dentate, 1–3-plinerved. (*S. and centr. America, Mexico* 1 *and Pacific islands* 1.)

Trichocoronis A. Gray, *Plant. Fendl.* 65.—B. H. *Gen.* ii. 240, n. 50.—*Margacola* Buckl.: *Proc. Acad. Philad.* (1861), 457 (ex A. Gray); receptacle nearly flat or slightly convex bare.

102. **Lomatozona** Bak.[1]—Flowers homogamous; corolla tubular, very shortly 5-dentate. Anthers appendiculate at apex. Style branches slightly clavate. Fruit slender cylindrical, 5-costate; pappus coroniform and much shorter than fruit; hairs 8–12, unequal, united in a ring at base.—A grey pubescent undershrub; stem knotty; leaves opposite lyrately pinnate, deltoid, or pinnately 2-jugate; flowers[2] in terminal cymes of few capitules; receptacle hemispherical paleaceous[3] between flowers; bracts of campanulate involucre unequal, 2–3-seriate; the outer gradually shorter.[4] (*Brazil.*[5])

103. **Sclerolepis** Cass.[6]—Flowers[7] (nearly of *Eupatorium*) 1-morphous; limb of tubular corolla campanulate. Anthers appendiculate. Fruit shortly stipitate, 5-gonal, pappus hairs 4–6, short obovate obtuse, membranous or subcartilaginous, subentire or unequally lacerate.—A slender aquatic herb; leaves verticellate linear; capitules solitary terminal, long pedunculate; receptacle bare; bracts of open subhemispherical involucre ∞, unequal, sub-2-seriate, 1–3-nerved, sometimes slightly coloured towards apex.[8] (*N. America.*[9])

104. **Brachyandra** Phil.[10]—Flowers[11] 1-morphous; limb of tubular corolla not extended, 5-fid. Anthers appendiculate. Fruit oblong glabrous, 5-costate; pappus hairs plumose, 1-seriate.—A much branched somewhat viscid-pubescent shrub; leaves alternate

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fruit 5-angled; pappus minutely pilose or 0; limb of corolla campanulate; anthers shortly appendiculate; stem herbaceous, radicant at base, pilosulous; capitules stipitate terminal, solitary or 2-nis. (*Mexico.*)

Gymnocoronis DC. *Prodr.* v. 106; vii. 266.—Endl. *Gen.* n. 2256.—B. H. *Gen.* ii. 239, n. 46: receptacle convex bare; limb of corolla subcampanulate; anthers shortly and obtusely appendiculate or oftener exappendiculate; style more dilated at apex; pappus hairs 0; stem herbaceous, glabrous or glandular-pilose; leaves opposite, crenately dentate. (*Mexico and extra-trop. S. America.*)

[7] Spec. about 20. Hook. *Icon.* t. 238, 239.—Wight, *Icon.* t. 1087, 1088.—Fr. et Sav. *Enum. pl. jap.* i. 219.—Harv. and Sond. *Fl. cap.* iii. 57.—Benth. *Fl. austral.* iii. 462.—Griseb. *Fl. brit. W.-Ind.* 356.—Miq. *Fl. ind.-bat.* ii. 23.—Oliv. and Hiern, *Fl. trop. Afr.* iii. 299.—*Bot. Mag.* t. 2410 (*Ageratum*).—Walp. *Rep.* ii. 545 (*Gymnocoronis*); vi. 106; *Ann.* i. 393 (*Piqueria*), 395; ii. 813 (*Trichocoronis*); v. 151 (*Tuberostyles*), 152 (*Trichocoronis*), 153.

[1] *Mart. Fl. bras.* vi. p. ii. 198, t. 54, fig. 2.

[2] "20–30 in a capitule."

[3] "Pales like those of involucre."

[4] A genus unknown to us; perhaps a sect. of *Eupatorium;* pappus, as in *Phania*, short coroniform.

[5] Spec. 1. *L. artemisiæfolia* Bak.—*Habertia pinnata* Pohl, mss.

[6] *Dict. sc. nat.* xlviii. 155.—DC. *Prodr.* v. 114.—Endl. *Gen.* n. 2262.—B. H. *Gen.* ii. 240, n. 48.

[7] "Purplish."

[8] ? Better a sect. of *Eupatorium*, leaves verticillate? Scarcely different generically is *Fleischmannia* Sch. bip. *Flora* (1850), 417.—B. H. *Gen.* ii. 243, n. 58; leaves opposite or alternate, dentate or incised; pappus hairs 5, 6, very thin.

[9] Spec. 1. *S. verticillata* Cass.—A. Gray, *Man.* (ed. 1856), 184.—*Sparganophorus verticillatus* Michx, *Fl. bor.-amer.* ii. 95.—Nutt. *Gen.* ii. 139.—Ell. *Sketch*, ii. 312.—*Ethulia tenuiflora* Walt. *Car.* 195.

[10] *Fl. atacam.* 34, t. 4 D.—B. H. *Gen.* ii. 244, n. 62.

[11] "Purplish."

linear, revolute at margin; capitules solitary at ends of twigs, shortly pedunculate; bracts of involucre few-seriate, imbricate; the inner gradually larger, coloured or scarious; receptacle flat bare.[1] (*Chili.*[2])

105? **Leptoclinium** GARDN.[3]—Flowers 1-morphous; corolla tubular, shortly 5-fid. Anthers appendiculate. Style much dilated at apex. Fruit 5-angled; 1, 2, secondary ribs here and there developed; pappus hairs ∞, rigid barbellate, caducous, 1-seriate.—A somewhat hairy shrub; leaves alternate subsessile entire crowded; capitules crowded at ends of branches; receptacle small conical, bare or sparsely hairy-paleaceous; bracts of ovoid involucre ∞, rigidly membranous, few-seriate imbricate; the outer gradually shorter.[4] (*Brazil.*[5])

106. **Stevia** CAV.[6]—Flowers[7] (nearly of *Eupatorium*) 1-morphous; corolla tubular at base; limb slightly dilated, 5-fid, valvate. Anthers appendiculate. Style branches long thin, often linear rather obtuse. Fruit narrow, glabrous or ciliate, often compressed, 1–2-costate or 4–5-angled, sometimes ∞-aristate; pappus hairs 1-∞, bare or barbellate, often subulate, dilated at base to a more or less deeply lobed cupule.—Annual or perennial herbs, or undershrubs;[8] leaves opposite or partly alternate, entire or serrate, triplinerved or 3-sected; capitules in variously compound terminal cymes, often corymbiform, 4–5-flowered or more rarely 1–20-flowered (*Schœtzellia*[9]); receptacle flat or slightly convex bare; involucral bracts few (4–6) or more rarely ∞ (*Schœtzellia*), sub-2-seriate. (*Trop. and extra trop. N. and S. America.*[10])

107. **Carphochæte** A. GRAY.[11]—Flowers[12] (of *Eupatorium*) 1-morphous; limb of tubular corolla[13] slightly dilated, 5-fid.

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[1] A genus (unseen by us) apparently very near to *Symphyopappus*, if not to *Eupatorium*.

[2] Spec. 1. *B. macrogyne* PHIL.

[3] *Hook. Lond. Journ.* v. 461 (sect. of *Liatris*).—B. H. *Gen.* ii. 244, n. 63.

[4] ? Sect. of *Symphyopappus*, remarkable for its pappus.

[5] Spec. 1. *L. brasiliense.*—*Liatris brasiliensis* GARDN.—BAK. *Mart. Fl. bras.* vi. p. ii. 272.—WALP. *Rep.* vi. 705.

[6] *Icon.* iv. 32, t. 354–356.—CASS. *Dict. sc. nat.* xxvi. 227.—POIR. *Dict.* Suppl. v. 247.—LESS. *Syn.* 135.—DC. *Prodr.* v. 115.—ENDL. *Gen.* n. 2264.—B. H. *Gen.* ii. 242, t. 56.—*Nothites* CASS. *Dict. sc. nat.* xxxv. 163.—DC. *Prodr.* v. 186.

[7] White, pink, or purplish, much longer than involucre.

[8] Often aromatic.

[9] SCH. BIP. *Flora* (1850), 419.—B. H. *Gen.* ii. 242, n. 55.

[10] Spec. about 75. JACQ. *Hort. schœnbr.* t. 300 (*Ageratum*); *Fragm.* t. 127, 128.—H. B. K. *Nov. gen. et spec.* iv. t. 351–353.—SCHLCHTL. *Hort. hal.* t. 8.—REICHB. *Ic. exot.* t. 183, 190, 197.—A. GRAY, *Emor. Rep. Bot.* 73.—PHIL. *Fl. atacam.* 29; *Linnæa*, xxxiii. 128.—BAK. *Mart. Fl. bras.* vi. p. ii. 201, t. 55–58.—REMY, *C. Gay Fl. chil.* iii. 478.—GRISEB. *Symb. Fl. argent.* 166.—*Bot. Mag.* t. 1849, 1861, 2040, 3792, 3856.—*Bot. Reg.* t. 93; (1838), t. 59.—WALP. *Rep.* ii. 546; vi. 107, 704; *Ann.* i. 395; ii. 814; v. 153.

[11] *Pl. Fendler.* 65; *Pl. Wright.* i. 89.—B. H. *Gen.* ii. 247, n. 71.

[12] White or pink.

[13] Long for series.

Anthers appendiculate,[1] at apex, obtuse at base. Style, &c., of *Eupatorium*. Fruit elongate, 10-costate, pubescent or hirsute; pappus hairs ∞, unequal, compressed rigid, barbellate-aristate above.—Herbs or undershrubs; leaves opposite sessile narrow and entire; capitules[2] stipitate, loosely cymose; receptacle small bare; involucral bracts ∞, unequal, few-seriately imbricate; the outer gradually smaller. (*Mexico.*[3])

108. **Carminatia** Sess. and Moc.[4]—Flowers (nearly of *Carphochæte*) polygamous; limb of tubular corolla narrow, shortly 5-fid. Anthers appendiculate (in female flowers sterile). Style branches rather acute glabrous. Fruit 5-angled glabrous; pappus hairs ∞, long plumose, 1-seriate.—An erect herb; leaves opposite, petiolate, subentire or dentate; capitules[5] in sub-1-parous cymes, sessile or shortly stipitate; receptacle nearly flat bare; involucral bracts unequal few-seriate rather stiff acute.[6] (*Mexico.*[7])

109. **Kuhnia** L.[8]—Flowers[9] 1-morphous; limb of corolla more or less dilated, shortly or narrowly 5-fid, valvate. Anthers appendiculate at apex, obtuse at base. Style branches obtuse or more or less clavate. Fruit glabrous or oftener slightly hirsute, 10-costate; pappus hairs ∞, barbellate, scabrous or more or less long plumose.—Perennial herbs, sometimes shrubby at base; stem often simple; root often tuberous; leaves alternate, often narrow, entire, rarely dentate, sometimes amplexicaul, 1–5-nerved; capitules in racemiform or corymbiform cymes; receptacle flat or slightly convex, bare or more rarely narrow-paleaceous between the flowers; bracts of oblong, ovoid, hemispherical or subcampanulate involucre ∞, unequal, sometimes striated, herbaceous or scarious; the outer gradually smaller.[10] (*N. America.*[11])

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[1] "Appendage sometimes double."

[2] Large for the series.

[3] Spec. 3. Walp. *Ann.* ii. 814; v. 161.

[4] Ex DC. *Prodr.* vii. 267.—Deless. *Ic. sel.* iv. t. 98.—Endl. *Gen.* n. 2268[1].—B. H. *Gen.* ii. 243, n. 60.

[5] Rather large for the series.

[6] A genus very near to *Carphochæte*, notwithstanding the form of pappus.

[7] Spec. 1. *C. tenuiflora* DC.

[8] *Gen.* n. 237.—DC. *Prodr.* v. 126 (part.).—Rafin. *Mon. gen. Kuhnia* (1836).—Endl. *Gen.* n. 2268.—B. H. *Gen.* ii. 248, n. 72.

[9] White, pink, purple, or rarely "yellowish."

[10] Sections of the genus are:

Carphephorus Cass. *Bull. Soc. philom.* (1816), 198; *Dict. sc. nat.* vii. 149.—Less. *Syn.* 158.—DC. *Prodr.* v. 132.—Endl. *Gen.* n. 2271.—B. H. *Gen.* ii. 249, n. 75: pappus hairs scabrous or barbellate; receptacle paleaceous; leaves alternate; involucral bracts estriate pluriseriate.

Liatris Schreb. *Gen.* 542 (not Don).—Gærtn. *Fruct.* ii. t. 167.—DC. *Prodr.* v. 128.—Endl. *Gen.* n. 2270.—B. H. *Gen.* ii. 248, n. 73.—*Psilosanthus* Neck. *Elem.* i. 69.—*Calostema* Don, *Sweet Brit. fl. Gard.* ser. 2, sub n. 184: pappus hairs nearly bare, barbellate or plumose; capitules in false, sometimes cymiferous, centrifugal flowering spikes; leaves alternate; involucral bracts pluriseriate, estriate.

Trilisa Cass. *Bull. Soc. philom.* (1818); *Dict. sc. nat.* lv. 310.—DC. *Prodr.* v. 131 (part.).—B. H. *Gen.* ii. 248, n. 74: pappus hairs barbellate; cymes of capitules corymbiform; involucral bracts estriate, 2–3-seriate.

[11] Spec. about 25. Vent. *Jard. Cels.* t. 79 (*Eupatorium*), 91 (*Kuhnia*).—Torr. et. Gr. *Fl.*

110. **Adenostyles** Cass.[1]—Flowers[2] (of *Eupatorium*) 1-morphous; corolla tube thin; limb narrowly campanulate, 5-fid, valvate. Anthers appendiculate.[3] Style branches long clavate, obtuse at apex. Fruit 10-costate; pappus hairs ∞, few-seriate scabrous.—Perennial herbs, glabrous or tomentose; leaves alternate or basilar, petiolate; limb oftener broad, sometimes pedatinerved at base; unequally dentate; petiole stipuliform dilated at base; capitules few-flowered in full compound corymbiform cymes; receptacle nearly flat bare; bracts of subcampanulate or cylindrical involucre small subequal, or the very few outer very short.[4] (*Mid. and south. Europe, N. America.*[5])

V. ASTEREÆ.

111. **Aster** T.—Flowers (oftener 2-coloured) 2-morphous; the radial hermaphrodite, fertile or sometimes sterile, more rarely 0; corolla ligulate; the discal hermaphrodite, and all fertile, or the inner or sometimes all sterile. Style branches of hermaphrodite flowers more or less complanate, with papillose or sometimes barbate lanceolate or 3-angular or subulate appendages at apex. Fruit obtuse or rostrate at apex, terete or more or less compressed, bare or sparsely costate; pappus hairs ∞, more or less elongate, 2-∞-seriate or more rarely 1-seriate, or all equal and thin, occasionally very short, or unequal; the inner forming a small crown, more or less complanate; or the inner longer than the fruit rigid few or ∞.—Annual or oftener perennial herbs, glabrous or variously clothed; leaves generally alternate, entire, crenate, dentate or incised, sometimes rosulate at base; capitules rarely

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bor.-amer. ii. 67, 76 (*Liatris*), 78.—Torr. *Fl. N. York*, t. 47; *Marey Exped. Rep. Bot.* t. 8 (*Liatris*).—Hook. *Fl. bor.-amer.* t. 105.—A. Gray, *Man.* (ed. 1856), 184; *Proc. Amer. Acad.* v. 159 (*Carphephorus*).—Chapm. *Fl. S. Un. St.* 190 (*Carphephorus, Liatris*), 193.—Bertol. *Misc. bot.* v. t. 1-3 (*Liatris*).—Sweet *Brit fl. Gard.* t. 44, 49, 87, 184 (*Liatris*).—Andr. *Bot. Repos.* t. 401 (*Serratula*), 633 (*Liatris*).—*Bot. Reg.* t. 267, 590, 595, 948, 1654 (*Liatris*) — *Bot. Mag.* t. 1411, 1709, 3829 (*Liatris*).—Walp. *Rep.* ii. 548, 549, 949 (*Liatris*), 551 (*Carphephorus*); vi. 107 (*Carphephorus*); *Ann.* i. 936; ii. 815 (*Liatris*).

[1] Cass. *Dict. sc. nat.* i. Suppl. 59.—DC. *Prodr.* v. 203.—Endl. *Gen.* n. 2283.—B. H. *Gen.* ii. 247, n. 69.—*Cacalia* T. *Inst.* 451 (not of others).—Gærtn. *Fruct.* t. 266. fig. 2.

[2] White or purplish.

[3] Filaments said to be 1-adelphous in *Adenostylium* Reichb. (*Ic. Fl. germ.* xvi. 2, t. 895), apparently an abnormal form of *Adenostyles.*

[4] A genus differing from *Eupatorium* in habit, leaves and ribs (10) of fruit, by some referred to the *Tussilagineæ* for some affinities, connecting the *Senecionideæ* with the *Eupatorieæ.*

[5] Spec. 3, 4, of which 2 European. Jacq. *Fl. austr.* iii. t. 234, 235 (*Cacalia*).—Reichb. *Ic. Fl. germ.* xvi. t. 893, 894.—Lge, *Pl. nov. hisp.* t. 24.—Willk. et Lge, *Prodr. Fl. hisp.* i. 27 —Boiss. *Fl. or.* iii. 155.—Gren. et Godr.—*Fl. de Fr.* ii. 86.

solitary pedunculate; oftener variously disposed in cymes; receptacle more or less foveolate and often produced around flowers in unequal and unequally lacerate fringes; involucral bracts ∞, 2-∞-seriate; narrow or sometimes foliaceous, sometimes scarious or herbaceous-appendiculate at apex and margin. (*All warm and temp. reg.*)—*See* p. 32.

112. **Calotis** R. Br.[1]—Flowers[2] nearly of *Aster;* the radial female fertile, 1-seriate; the discal hermaphrodite generally sterile. Radial fruit compressed; pappus hairs few (1, 2, or 3–8), accrescent after anthesis, more or less rigid spiniform; sometimes a few paleaceous scalelike intermixed; the discal sterile; pappus short or 0.—Annual or often perennial herbs, branched or cæspitose; leaves basal or alternate, entire, dentate, crenate or pinnate-dissected; capitules pedunculate; the fruit-bearing globular; receptacle without pales, flat or convex; bracts of broadly campanulate or subhemispherical involucre few-seriate, dry or scarious at margin.[3] (*Australia.*[4])

113.—**Minuria** DC.[5]—Flowers[6] nearly of *Aster;* the radial fertile in many series; the discal hermaphrodite sterile. Radial fruit compressed subenervate; pappus hairs scabrous or barbellate; the discal fruit sterile; pappus hairs barbellate or plumose, paleaceous-dilated at base; pales sometimes short intermixed, or connate in a short scarious-membranous cupule.—Herbs or undershrubs, glabrous, pubescent or lunate; leaves alternate, entire or lobed; capitules stipitate solitary or corymbiform cymose; receptacle flat bare; involucre, corolla, &c. of *Calotis.*[7] (*Australia.*[8])

114. **Monoptylon** Torr. and A. Gray.[9]—Flowers[10] of *Aster*, 2-morphous. Fruit slightly compressed; lobes of crownlike pappus 2, more or less deeply connate and denticulate at margin; inner hair 1, subulate plumose.—A dwarf branching pubescent herb; leaves alternate narrow entire; capitules (of *Aster*[11]) terminal solitary. (*West. N. America.*[12])

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[1] *Bot. Reg.* t. 504.—B. H. *Gen.* ii. 267, n. 124.—*Goniopogon* Turcz. *Bull. Mosc.* (1851), i. 173, t. 2.—*Huenefeldia* Walp. *Linnæa*, xiv. 307.—*Cheiroloma* F. Muell. *Linnæa*, xxv. 401.

[2] The radial white or bluish.

[3] Sections (B. H.) 4: 1. *Eucalotis;* 2. *Acantharia;* 3. *Cymbaria;* 4. *Cheiroloma.*

[4] Spec. 15. F. Muell. *Pl. Vict.* t. 36.—A. Gray, *Proc. Amer. Acad.* v. 121.—Benth. *Fl. austral.* iii. 500.

[5] *Prodr.* v. 298.—Endl. *Gen.* n. 2338.—B. H. *Gen.* ii. 267, n. 123.—*Therogeron* DC. *Prodr.* v. 283.—*Elachothamnus* DC. *Prodr.* v. 398.—*Kippistia* F. Muell. *Babb. Exped. Rep.* 2.

[6] Radial oftener white.

[7] To which perhaps it is congeneric?

[8] Spec. 5. F. Muell. *Pl. Vict.* t. 34 (*Elachothamnus*), 35 (*Kippistia*).—Sond. *Linnæa*, xxv. 467.—Benth. *Fl. austral.* iii. 497.

[9] *Bost. Journ. Nat. Hist.* v. 106, t. 13.—B. H. *Gen.* ii. 267, n. 125.

[10] Radial white and finally lilac.

[11] Of which rather a sect. (?)

[12] Spec. 1. *M. bellidiforme* Torr. et A. Gray.

115. **Eremiastrum** A. Gray.[1]—Flowers[2] (of *Aster*) 2-morphous; the radial female, 1-seriate; the discal hermaphrodite fertile. Fruit long obovate compressed; pappus hairs unequal; the inner 8–10, longer; the outer gradually shorter thin, sometimes more or less connate at base. Other characters of *Aster*.[3]—A hispid-setose annual; leaves alternate linear entire; capitules terminal sessile between leaves or dichotomous; receptacle slightly convex bare; bracts of subcampanulate involucre[4] unequal; the outermost subfoliaceous. (*California*.[5])

116. **Chætopappa** DC.[6]—Flowers[7] (nearly of *Aster*) 2-morphous; the radial female fertile, 1-seriate; the discal hermaphrodite often partly sterile. Style branches complanate, obtusely appendiculate. Fruit subterete, 5-costate; pappus hairs of fertile fruit to 5, rigid aristiform scabrous; often alternating with a few small transparent membranous lacerated pales; pappus of sterile fruit small or subnil generally destitute of hairs.—A slender much-branched annual; leaves (small) alternate entire; capitules (small) long and slenderly stipitate; receptacle small bare; bracts of subcampanulate involucre few acute unequal imbricate.[8] (*N. America*.[9])

117. **Gymnostephium** Less[10]—Flowers (nearly of *Aster*[11]) 2-morphous; the radial female fertile, 1-seriate; the discal hermaphrodite sterile. Style branches of hermaphrodite flowers narrow, lanceolately appendiculate. Radial fruit compressed callose at margin, tubercular on face, without pappus; discal fruit compressed (effete); pappus hairs small barbellate or shortly plumose very caducous.—Small undershrubs; leaves alternate narrow entire, often amplexicaul; capitules long pedunculate terminal, solitary or cymose; receptacle more or less deeply conical foveolate; bracts of hemispherical or subcampanulate involucre unequal, imbricate, few-seriate. (*South Africa*.[12])

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[1] *M* . *Amer. Acad.* ser. 2, v. 320.—B. H. *Gen.* ii. 270, n. 133.

[2] Radial white.

[3] Of which rather a sect. (?)

[4] Rather of *Erigeron*.

[5] Spec. 1. *E. bellidifolium* A. Gray.—Walp. *Ann.* v. 186.

[6] *Prodr.* v. 301 (not Ag.).—Endl. *Gen.* n. 2343.—B. H. *Gen.* ii. 268, n. 128.—*Chætanhophora* Nutt. (mss. ex DC: not of others).—*Diplostelma* Rafin. ex Torr. et Gr. *Fl. N.-Amer.* ii. 187.

[7] Ligulate white or purple.

[8] Better a sect. of *Aster*? Affinity with *Keerlia* evident.

[9] Spec. 1. *C. asteroides* DC.

[10] *Syn.* 185.—Nees, *Aster.* 253.—DC. *Prodr.* v. 300.—Endl. *Gen.* n. 2340.—B. H. *Gen.* ii. 266, n. 120.—*Heteractis* DC. *Prodr.* vi. 468.—Deless. *Ic. sel.* iv. t. 65.—Endl. *Gen.* n. 2826.

[11] Of which perhaps a sect. (?). "Genus forte nimis artificiale" (DC.).

[12] Turcz. *Bull. Mosc.* (1851), p. ii. 60 (*Agathæa*).—Harv. and Sond. *Fl. cap.* iii. 66.—Walp. *Ann.* v. 172 (*Agathæa*).

118.—**Detris** Edans.[1].—Flowers [2] (nearly of *Aster* [3]) 2-morphous; the radial female fertile or sometimes sterile; the discal hermaphrodite fertile or partly sterile. Fruit compressed; nerviform at margin; faces slightly or not few-costate; pappus hairs thin, rather scabrous or barbellate, 1- or more rarely 2-seriate; the outer very short generally caducous.—Herbs or small shrubs; leaves alternate, entire or dentate; capitules generally solitary, oftener rather long pedunculate; receptacle nearly flat, bare or foveolate; bracts of involucre unequal imbricate, more or less scarious at margin. (*South Africa, Abyssinia.*[4])

119. **Mairia** Nees.[5]—Flowers nearly of *Aster;* the radial female fertile sub-1-seriate; the discal hermaphrodite fertile or sterile. Radial corollas ligulate, subentire [6] at apex, rarely, as in discal flowers, yellow (*Homochroma*[7]). Style branches narrow compressed, subulately appendiculate. Fruit compressed; nerve in face 1 (or 0); pappus hairs generally rather stiff, 1-seriate, or a few outer shorter, barbellate or plumose.—Herbs or undershrubs; leaves alternate or basal rosulate; capitules pedunculate solitary or corymbiform cymose; receptacle flat or nearly so bare; bracts of involucre few-seriate unequal, scarious at margin, or the outer short or foliaceous.[8] (*South Africa.*[9])

120. **Charieis** Cass.[10]— Flowers 2-morphous; the radial [11] female, 1-seriate; the discal [12] hermaphrodite fertile, or the inner ones sometimes sterile. Style branches compressed, sometimes

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[1] *Fam. des pl.* ii. 131.—*Felicia* Cass. *Dict. sc. nat.* xvi. 314.—DC. *Prodr.* v. 219.—Endl. *Gen.* n. 2297.—*Agathea* Cass *Bull. Soc. philom.* (1815), 175; *Dict.* i. Suppl. 77, t. 89.—DC. *Prodr.* v. 223.—*Detridium* Nees, *Aster.* 255.—*Munychia* Cass. *Dict.* xxxvii. 483.—Endl. *Gen.* n. 2298.—*Polyarrhena* Cass. *op. cit.* lvi. 172.—*Asterosperma* Less. *Syn.* 389.—DC. *Prodr.* vii. 299.—*Elphegea* Less. *Syn.* 182.

[2] Radial white or bluish.

[3] Of which perhaps a sect. (?)

[4] Spec. 40–50. Jacq. *Hort. schœnbr.* iii. t. 370 (*Aster*).—Vent. *Jard. Malmais.* t. 82. (*Aster*).—Turp. *Dict. sc. nat.* Atl. t. 89 (*Agathea*).—Jaub. et Spach, *Ill. pl. or.* t. 354.—Harv. *Thes. cap.* t. 154 (*Aster*).—Harv. and Sond. *Fl. cap.* iii. 69 (*Aster*, part.).—*Bot. Mag.* t. 33, 884, 2286, 2718 (*Aster*). 249 (*Cineraria*).—Walp. *Ann.* ii. 820; vi. 172 (*Felicia*).

[5] *Aster.* 247 (1818).—DC. *Prodr.* v. 217 (part.).—Endl. *Gen.* n. 2296.—B. H. *Gen.* ii. 266, n. 122.—*Zyrphelis* Cass. *Ann. sc. nat.* sér. 1. xvii. 420; *Dict. sc. nat.* lx. 597.

[6] White or pink.

[7] DC. *Prodr.* v. 324.—Endl. *Gen.* n. 2371.—B. H. *Gen.* ii. 258, n. 97.

[8] ? Rather a sect. of *Aster*.

[9] Spec. about 10. Harv. and Sond. *Fl. cap.* iii. 64.—*Bot. Reg.* t. 855 (*Gerberia*).

[10] *Bull. Soc. philom.* (1817), 68; (1821), 12; *Dict. sc. nat.* viii. 191; xxiv. 369; xxxvii. 463, 489.—Less. *Syn.* 389.—Nees, *Aster.* 268.—DC. *Prodr.* v. 300.—Endl. *Gen.* n. 2341.—B, H. *Gen.* ii. 266, n. 121.—*Kaulfussia* Nees, *Hor. phys. berol.* 53, t. 11 (not Bl.).

[11] Bluish.

[12] Bluish or yellow.

cuneate, oftener rather obtuse at apex. Fruit oblong-obovoid, thickly marginate,[1] more or less compressed ; pappus hairs in ray 0 ; in disk long barbellate or plumose.—An annual, more or less hirsute; leaves alternate entire ; capitules long stipitate ; receptacle nearly flat bare ; bracts of subcampanulate involucre 1-seriate, finally hardly contiguous, herbaceous. (*South Africa.*[3])

121. **Amellus** L.[4]—Flowers nearly of *Aster*, 2-morphous, all fertile ; the radial[5] female, or sometimes 0 ; the discal hermaphrodite. Style branches in discal flowers narrow rather flat, lanceolate- or linear-appendiculate. Fruit compressed nerveless, thickened or sulcate at margin ; pappus pales few short unequal barbellately sublumose.—Perennial herbs ;[6] leaves alternate; the lower often opposite ; capitules solitary ; receptacle more or less convex ; each flower axillate to a long caducous pale ; bracts of subhemispherical or subcampanulate involucre unequal, ∞-seriate ; the inner conformed to pales. (*South Africa.*[7])

122. **Shawia** Forst.[8]—Flowers nearly of *Aster*, 2-morphous, fertile ; the radial[9] female, or more rarely 0 ; the discal[10] hermaphrodite. Style branches compressed, shortly or lanceolately appendiculate, sometimes obtuse. Fruit terete or rather compressed, 5-10-costate ; pappus hairs thin ∞ ; the outer more or less shorter, sometimes a little broader.—Herbs undershrubs or shrubs, sometimes arborescent, variously pilose or squamose; leaves

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[1] Sometimes resembling that of *Cucurbitaceæ*.

[2] Nearly of *Senecio*.

[3] Spec. 1. *C. pilosella.*—*C. heterophylla* Cass.—Harv. and Sond. *Fl. cap.* iii. 69.—*C. cærulea* Nees.—*C. Neesii* Cass.—*Kaulfussia amelloides* Nees.—*Bot. Reg.* t. 490.—*Bot. Mag.* t. 2177.—*Leyssera pilosella* Thunb. *Fl. cap.* 691 (part.).

[4] *Gen.* n. 978.—Cass. *Dict.* viii. 577 ; xvi. 210 ; xxxvii. 463, 489.—DC. *Prodr.* v. 213.—Endl. *Gen.* n. 2292.—B. H. *Gen.* ii. 265, n. 119.—*Kraussia* Sch. bip. *Flora* (1844), 672.—*Hænelia* Walp. *Rep.* ii. 974.

[5] Bluish.

[6] Sometimes highly aromatic.

[7] Spec. 7, 8. Jacq. *Collect.* v. t. 10, fig. 1.—Lamk, *Ill.* t. 682, fig. 1.—Kze, *Pug.* i. 9 (*Agathæa*).—Harv. and Sond. *Fl. cap.* iii. 61.—*Bot. Reg.* t. 586.

[8] *Char. gen.* 95, t. 48 (1776).—Cass. *Dict. sc. nat.* xxxiv. 40.—Less. *Syn.* 156.—DC. *Prodr.* v. 78.—Endl. *Gen.* n. 2221.—Sch. bip. *Pollichia* (1861), 172.—*Olearia* Mœnch, *Meth.* Suppl. (1802), 254.—Nees, *Aster.* 184.—DC. *Prodr.* v. 271.—Endl. *Gen.* n. 2318.—B. H. *Gen.* ii 276, n. 142.—*Eurybia* Cass. *Bull. Soc. philom.* (1818), 166 ; *Dict. sc. nat.* xvi. 486.—DC. *Prodr.* v. 265.—Endl. *Gen.* n. 2317.—*Haxtonia* Cal. ex Don, *Edinb. N. Phil. Journ.* (1831), 272.—*Spongotrichum* Nees, *Aster.* 176.—*Steetzia* Sond. *Linnæa*, xxv. 450.—*Steiractis* DC. *Prodr.* v. 345.

[9] White or bluish.

[10] Corolla yellow, bluish, or purple ; lobes 5, often revolute. We think the name *Olearia* (the capitules of which are very few-, few-, or many-flowered) is not to be preferred to *Shawia*, for the capitules of *S. paniculata* Forst. are generally 1-flowered and rarely few-flowered. Moreover many genera of the family vary in the same manner as to the number of flowers in their capitules.

alternate or rarely opposite, sometimes crowded, 1- or penninerved, entire or dentate; capitules solitary or oftener in corymbiform or compound racemose cymes, 1-∞-flowered; receptacle flat or convex, sometimes foveolate or deciduously paleaceous between the flowers; involucral bracts unequal, imbricate, ∞-seriate, dry or scarious at margin.[1] (*Australia, New Zealand, extratrop. west and antartic America.*[2])

123 ? **Hinterhubera** Sch. bip.[3]—Flowers all fertile, 2-morphous;[4] the radial female; the discal hermaphrodite; discal corollas regular or subirregular, 5-fid; the radial unequally 3–5-fid longer.[5] Style branches narrow subulately appendiculate; in the discal flowers broader compressed obtuse. Fruit slightly compressed or in the discal 4–5-angled; pappus hairs ∞, unequal thin, thinly barbellate.—Heathlike shrubs; leaves alternate or sub-opposite, crowded, entire linear; capitules terminal solitary; receptacle rather convex alveolate; bracts of broadly subcampanulate involucre imbricate elongate somewhat unequal.[6] (*Venezuela and Andine Columbia.*[7])

124 ? **Sommerfeltia** Less.[8]—Flowers of *Aster*, the radial female, 1-seriate; the discal hermaphrodite fertile or partly sterile; style branches of hermaphrodite flowers linear-compressed, rather long linear-lanceolately appendiculate. Fruit much compressed villose, not costate, nerviform margined; hairs of persistent pappus ∞, thin scabrous, sub-2-seriate.—A small shrub cæspitose at base densely leaved; leaves[9] alternate crowded subulate rather stiff pinnatisect somewhat prickly; capitules solitary at top of few-

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[1] A sect. of the genus is *Chiliotrichium* Cass. *Bull. Soc. philom.* (1817), 69; *Dict.* viii. 576; xxxvii. 463, 489.—DC. *Prodr.* v. 216.—Endl. *Gen.* n. 2294.—B. H. *Gen.* ii. 276, n. 141.—*Tropidolepis* Tausch. *Flora* (1829), 68: receptacle deciduously paleaceous; other characters of *Eushawia*. (*Extratrop. N. Amer.*)

[2] Spec. about 70 (descr. about 90). Labill. *Pl. N.-Holl.* ii. t. 191, 195–203 (*Aster*).—Raoul *Ch. de pl. N.-Zél.* 18, t. 13.—Hombr. et Jacquin. *D'Urv. Voy. pôle Sud*, t. 28 (*Chiliotrichium*).—Hook. *Icon.* t. 485 (*Chiliotrichium*), 862 (*Olearia*).—Wedd. *Chlor. and.* i. t. 35 (*Chiliotrichium*).—F. Muell. *Pl. Vict.* t. 32, 33 (*Eurybia*); *Veget. Chat. Isl.* 19 (*Eurybia*); *Fragm.* i. 16, 50, 111, 202, 248; ii. 88, 110; iii. 18 (*Eurybia*).—Hook. f. *Fl. N.-Zel.* t. 30; *Fl. tasm.* t. 42–45 (*Eurybia*); *Handb. N.-Zeal. Fl.* 123, 731 (*Olearia*).—Benth. *Fl. austral.* iii. 464 (*Olearia*).—Remy, *C. Gay Fl. chil.* iv. 5 (*Chiliotrichum*).—*Bot. Mag.* t. 1509, 1563 (*Aster*), 4638 (*Olearia*).—Walp. *Rep.* vi. 702; *Ann.* i. 404; v. 171 (*Chiliotrichium*).

[3] Ex Wedd. *Chlor. andin.* i. 185, t. 39 B. (not Sch. bip. *Kotsch. exs. nub.*).—B. H. *Gen.* ii. 275, n. 139.—*Schætzellia* Sch. bip. *Ott. et Dietr. Allg. Gartenz.* xvii. 192 (not in *Flora*, xxxiii. 419).

[4] Of the same colour (?).

[5] Corolla nearly of *Scabiosa* and certain other *Dipsaceæ*.

[6] The plant is perhaps an anomalous form of *Diplostephium* (Wedd.). Flowers often in anomalous capitules, sometimes 2-corollate.

[7] Spec. 3. Wedd. *loc. cit.*

[8] *Syn.* 189 (not Schum.).—DC. *Prodr.* v. 302.—Endl. *Gen.* n. 2374.—B. H. *Gen.* ii. 275, n. 138.

[9] "Ash-grey."

leaved peduncle; receptacle flat, slightly foveolate; bracts of rather broad involucre imbricate, few seriate and very acute; the outer gradually shorter.[1] (*South. extratrop. Brazil.*[2])

125. **Celmisia** Cass.[3]—Flowers (nearly of *Aster*) generally all fertile, 2-morphous; the radial female; the discal hermaphrodite; radial corollas[4] ligulate open; discal[5] tubular; limb hardly or more or less campanulate, 5-fid, valvate. Anthers muticous at base or more or less sagittately acuminate. Style branches compressed, elongately or lanceolately appendiculate. Fruit rather long and compressed, 1–3-nerved on both sides; pappus hairs ∞, unequal thin rather scabrous.—Perennial herbs, variously (sometimes densely) silvery sericeous; leaves in branched stem (sometimes very short) alternate crowded, elongate entire; capitules[6] sessile or oftener terminal at the end of a scapelike few-leaved or leafless narrow-bracteate peduncle; receptacle flat or more or less convex foveolate; bracts of subhemispherical or obconical or broadly campanulate involucre narrow pluriseriate; the outermost short, the inmost sometimes appendiculate or slightly coloured.[7] (*New Zealand, Auckland and Campbell islands.*[8])

126. **Pleurophyllum** Hook. f.[9]—Flowers fertile, 2-morphous; the radial female, 1–2-seriate or 0; the discal hermaphrodite; radial corollas ligulate open; discal regular, narrow-tubular at base; lobes of campanulate limb 5, valvate. Anthers obtuse or shortly auriculate at base. Style branches of discal flowers complanate, rather long appendiculate. Fruit somewhat compressed, ∞-nerved; pappus hairs ∞, thin barbellate; the outer shorter.—Tall perennial herbs, densely silver-haired; leaves basal full petiolate entire, ∞-nerved; those of the scapes smaller or narrow

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[1] A plant apparently from description scarcely differing from *Aster*, except in habit.

[2] Spec. 1. *S. spinulosa* Less.—*Conyza spinulosa* Spreng. *Syst.* iii. 510.

[3] *Dict. sc. nat.* xxxvii. 259 (not vii.).—DC. *Prodr.* v. 209.—Endl. *Gen.* n. 2289.—B. H. *Gen.* ii. 278, n. 147.

[4] White, lilac, or violet.

[5] Yellow or purplish.

[6] Generally large, showy.

[7] "A genus closely allied to *Aster* and especially to *Oritrophium*, a sect. of *Erigeron*" (B. H.), differing chiefly in habit and large inflorescence.

[8] Spec. 20–25. Gaudich. *Freycin. Voy. Bot.* 470, t. 91.—Raoul, *Ch. pl. N.-Zél.* t. 14.—Hook. f. *Fl. antarct.* t. 26; *Fl. N.-Zel.* t. 31–34; *Handb. N.-Zeal. Fl.* 130; *Fl. tasm.* i. 181.—Linds. *Contrib. N.-Zeal. Bot.* t. 3.—F. Muell. *Fragm. Phyt. Austral.* v. 84 (*Aster*).—Benth. *Fl. austral.* iii. 488.

[9] *Fl. antarct.* i. 90, t. 22, 24.—B. H. *Gen.* ii. 278, n. 146.—*Albinea* Hombr. et Jacquin. *Voy. pôle Sud, Bot.* t. 4.

bractlike, alternate; capitules[1] in a loose simple (spurious[2]) raceme, stipitate; receptacle nearly flat foveolate; bracts of subhemispherical or broadly campanulate involucre, unequal, ∞-seriate; the outer shorter.[3] (*Auckland and Campbell isles.*[4])

127. **Diplostephium** Cass.[5]—Flowers[6] 4 all fertile (nearly of *Aster*), 2-morphous; the radial female or 0; the discal hermaphrodite; style branches of hermaphrodite flowers complanate obtuse, attenuated at base. Radial fruit compressed; discal narrow, 3–5-angled; pappus hairs ∞, scabrous or barbellate; the outer sometimes shorter.—Shrubs; leaves alternate, sometimes crowded, entire, revolute at margin or broader dentate coriaceous, generally tomentose beneath; capitules at ends of twigs corymbiform cymose or in a compound leafy raceme, more rarely solitary; receptacle flat or slightly convex foveolate; bracts of obconical or subcampanulate involucre unequal imbricate; the outer smaller. (*Andine S. America.*[7])

128. **Commidendron** Burch.[8]—Flowers (nearly of *Aster*) all fertile, 2-morphous; the radial ligulate, 1–2-seriate; the discal hermaphrodite regular. Anthers entire obtuse at base, membranously appendiculate above. Style branches of hermaphrodite flowers narrow-appendiculate. Fruit scarcely or slightly compressed; ribs or nerves 3–5 (*Melanodendron*[9]), or 8–10; pappus hairs ∞, thin, 1–2-seriate, entire or scabrous unequal.—Trees or shrubs (gummiferous); leaves alternate, obovately lanceolate or oblong, subentire or dentate above, sometimes and in the top twigs crowded; capitules axillar, solitary or few cymose, or terminal and in corymbiform cymes; bracts of subcampanulate involucre ∞, many-seriate, acute, imbricate; the outer smaller; receptacle flat or nearly so bare or slightly foveolate. (*St. Helena.*[10])

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[1] Large.

[2] The inflorescence is properly cymose; the axis is much elongated.

[3] A genus allied to *Celmisia*, differing chiefly in habit and leaves.

[4] Spec. 2. Walp. *Rep.* vi. 181; *Ann.* v. 237.

[5] *Dict.* xxxvii. 486 (part.).—H. B. K. *Nov. gen. et spec.* iv. 96, t. 335.—DC. *Prodr.* v 273 (sect. *Amphistephium*).—Endl. *Gen.* n. 2319.—B. H. *Gen.* ii. 275, n. 140.—*Tetramolopium* Nees, *Aster.* 203 (part.).—DC. *Prodr.* v. 262.—*Simblocline* DC. *loc. cit.* 297.—*Linochilus* Benth. *Pl. Hartweg.* 197.

[6] "White or bluish."

[7] Spec. 16–18, H. B. K. *loc. cit.* t. 334 (*Aster*).—Wedd. *Chlor. andin.* i. 199, t. 36.—Walp. *Rep.* vi. 312 (*Linochilus*).

[8] DC. *Guillem. Arch. bot.* ii. 334 (1833); *Prodr.* v. 344.—Endl. *Gen.* n. 2378.—B. H. *Gen.* ii. 277, n. 144.

[9] DC. *Prodr.* v. 279 (1836).—Endl. *Gen.* n. 2325.—B. H. *Gen.* ii. 278, n. 145.

[10] Spec. 2. Hook. f. *Icon.* t. 1045 (*Melanodendron*), 1056, 1057.

129. **Erigeron** L.[1]—Flowers 2-morphous; the radial[2] female sterile, 2-∞-seriate; corolla ligulate narrow or very narrow, sometimes irregularly tubular; the discal[3] fertile or sometimes sterile regular; corolla tubular, shortly 4–5-lobed. Style branches of hermaphrodite flowers complanate, longer or shorter 3-angularly or lanceolately appendiculate. Fruit compressed, sometimes nervelike at margin, faces enervate or 1–2-nerved; pappus hairs ∞, few or numerous, or 1- or more rarely 2-seriate; the outer shorter or connate in a short fringed crown; the rest very thin.—Annual or perennial herbs, sometimes frutescent; clothing various; leaves alternate or rosulate at base, entire, dentate, incised or more rarely dissected; capitules[4] solitary or in corymbiform or compound racemose cymes; receptacle flat or slightly convex, sometimes foveolate or sparsely paleaceous; involucral bracts 2-∞-seriate, narrow unequal imbricate, sometimes short.[5] (*Trop. sub-trop. temp. or rarely frigid reg. of both worlds.*[6])

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[1] *Gen.* n. 951.—Less. *Syn.* 190.—DC. *Prodr.* v. 283; vii. 274.—Endl. *Gen.* n. 2332.—B. H. *Gen.* ii. 279, n. 151.—*Phalacroloma* Cass. *Dict. sc. nat.* xxxix. 404.—DC. *Prodr.* v. 297.—*Stenactis* Cass. *loc. cit.* l. 483.—Nees, *Aster.* 273.—*Polyactis* Cass.—Less. *Syn.* 188.—*Polyactidium* DC. *Prodr.* v. 281.—Endl. *Gen.* n. 2329.—*Leptostelma* Don, *Sweet Brit. fl. Gard.* ser. 2, t. 38.—*Trimorphæa* Cass. *Bull. Soc. philom.* (1817); *Dict.* xxxvii. 462, 482; lv. 348.—*Heterochæta* DC. *Prodr.* v. 282.—Endl. *Gen.* n. 2330.—*Woodvillea* DC. *Prodr.* v. 318.—*Terranea* Colla, *Mem. Acad. sc. torin.* xxxviii. 11, t. 23.—*Gusmania* Remy, *C. Gay Fl. chil.* iv. 12 (not R. et Pav.).—*Astradelphus* Remy, *Ann. sc. nat.* sér. 3, xii. 185.

[2] White, pink, or violet. [3] Generally yellow.

[4] Large, moderate, or small.

[5] Sections of the genus are:

Vittadinia A. Rich. *Fl. N.-Zel.* 250.—DC. *Prodr.* v. 280.—Endl. *Gen.* n. 2327.—B. H. *Gen.* ii. 281, 1233, n. 152.—*Microgyne* Less. *Syn.* 190 (not Cass.).—DC. *Prodr.* v. 296.—*Eurybiopsis* DC. *Prodr.* v. 260: bracts of involucre narrow, highly imbricate; appendages of style subulate; ribs of larger fruit 1-∞, or 0; pappus hairs more abundant.

Tetramolopium Nees, *Aster.* 202 (part.).—A. Gray, *Proc. Amer. Acad.* v. 119.—B. H. *Gen.* ii. 282, n. 153: stem shrubby or subshrubby; style of *Villadinia;* fruit and pappus of *Eurigeron.* (*Sandwich Is.*)

Brachyactis Ledeb. *Fl. ross.* ii. 495.—B. H. *Gen.* ii. 279, n. 150: involucral bracts narrow, 2–3-seriate; outer herbaceous; ligules very small; stem herbaceous foliate. (*Asia and temp. N. America.*)

Lachnophyllum Bge, *Rel. Lehman.* 151.—B. H. *Gen.* ii. 279, n. 149: involucral bracts narrow, ∞-seriate; inner scarious at margin; fruit subrostrate; stem herbaceous copiously lanate. (*Mid. and west. Asia.*)

Nidorella Cass. *Dict.* xxxvii. 469.—DC. *Prodr.* v. 321.—Endl. *Gen.* n. 2370.—B. H. *Gen.* ii. 283, n. 155: stem shrubby or subshrubby; involucral bracts sub-2-seriate; radial flowers female, 2-∞-seriate; corolla ligulate or sub-2-labiate; hermaphrodite flowers generally fertile. (*Trop. and south. Africa.*)

Conyza L. *Gen.* n. 950 (part.).—Less. *Syn.* 203.—DC. *Prodr.* v. 377; vii. 283.—B. H. *Gen.* ii. 283, 1233, n. 156.—H. Bn, *Bull. Soc. Linn. Par.* xxx.—*Eschenbachia* Mœnch, *Meth.* 573.—*Fimbrillaria* Cass. *Dict.* xvii. 54.—*Dimorphanthus* Cass. *loc. cit.* xiii. 254.—*Laennecia* Cass. *loc. cit.* xxi. 91.—DC. *Prodr.* v. 376.—*Webbia* Sch. bip. *Walp. Rep.* ii. 970 (not DC.): stem herbaceous subshrubby or shrubby; involucral bracts 2-∞-seriate; radial flowers female, 2-∞-seriate; the discal hermaphrodite generally fertile; fruit small compressed; pappus hairs thin, 1–2 seriate (*warm reg. of both hemispheres*). 1-morphous flowers of *C. chrysocomoia* become ligulate in cultivated plant (Desvx). A genus apparently not or scarcely distinguishable from *Aster* (and *Pluchea ?*) by any certain characters.

? *Achætogeron* A. Gr. *Pl. Fendl.* 72.—B. H. *Gen.* ii. 1232, n. 110 *a*: a Mexican plant, unknown to us; from its character apparently an anomalous sect. of *Erigeron;* pappus coroniform unequally 5–6-dentate.

[6] Spec. about 70. Jacq. *Hort. vindob.* iii. t. 19, 79; *Hort. schœnbr.* iii. t. 303.—H. B. K. *Nov.*

130. **Bellis** T.[1]—Flowers[2] fertile or partly sterile, 2-morphous; the radial female, 1- or sub-2- or more rarely ∞-seriate; corolla ligulate,[3] open entire or minutely 2–4-dentate, sometimes shortened; the discal hermaphrodite; corolla regular tubular;[4] limb tubular or more or less broadly campanulate, more or less elongate, 4, 5-dentate. Style branches of hermaphrodite flowers complanate, narrowly lanceolate- or 3-angularly appendiculate. Fruit compressed (rarely 4-angled), generally nerve-margined or subulate; faces nerveless or 1-nerved; pappus 0 or consisting of a small hairy crown, or more rarely of thin unequal hairs, intermixed with as many or a few paleaceous, often shorter, transparent truncate hairs.—Herbs, sometimes subacaulous or more or less erect and branching, sometimes cæspitose; leaves alternate or rosulate at base, entire, sinuate, dentate or pinnatisect or dissected; capitules solitary or in loose corymbiform cymes; receptacle more or less convex or conical bare; bracts of subhemispherical or more rarely broadly campanulate involucre 1–2-seriate, equal or slightly unequal, herbaceous or dry or scarious at margin.[5]

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gen. et spec. iv. t. 326–328 (*Conyza*). 332 (*Aster*). —Reichb. *Ic. exot.* t. 69, 134, 167 (*Conyza*); *Ic. Fl. germ.* t. 912 (*Stenactis*), 914–917.—Deless. *Ic. sel.* iv. t. 22 (*Conyza*).—Hook. *Fl. bor.-amer.* t. 120–123.—Labill. *Pl. N.-Holl.* t. 193.—Hook. f. *Fl. tasm.* t. 46.—Torr. et Gray, *Fl. N.-Amer.* ii. 166.—A. Gray, *Man.* (ed. 1856), 197; *Proc. Amer. Acad.* vi. 540; vii. 353, 355 (*Conyza*); *Emor. Rep. Bot.* 78.—Torr. *Whipple Exp. Bot.* 42.—Eat. *Forth. parall. Bot.* 147, t. 17.—Wedd. *Chlor. andin.* i. 189, t. 83 B, C, 84.—Benth. *Hook. Icon.* t. 1106 (*Brachyactis*), 1107 (*Lachnophyllum*); *Fl. austral.* iii. 490 (*Vittadinia*), 493; 496 (*Conyza*).—Boiss. *Diagn. or.* ser. 2, iii. 7; 17 (*Lachnophyllum*); *Fl. or.* iii. 162.—Phil. *Fl. atacam.* 29; *Linnæa*, xxviii. 722, 734 (*Conyza*); xxxiii. 133, 141 (*Conyza*).—Remy, *C. Gay Fl. chil.* iv. 69 (*Conyza*).—Chapm. *Fl. S. Unit. St.* 206.—Fr. et Sav. *Enum. pl. jap.* i. 227; 229 (*Conyza*).—Harv. and Sond. *Fl. cap.* iii. 86; 111 (*Conyza*). —Oliv. and Hiern, *Fl. trop. afr.* iii. 307; 311 (*Conyza*).—Klatt, *Ann. sc. nat.* sér. 5, xvii. 366 (*Conyza*).—Griseb. *Fl. brit. W.-Ind.* 364. Griseb. *Symb. Fl. arg.* 174, 178 (*Conyza*).—Willk. et Lge, *Prodr. Fl. hisp.* ii. 32; 34 (*Conyza*).—Gren. et Godr. *Fl. de Fr.* ii. 96.—*Bot. Reg.* t. 10, 1577.—*Bot. Mag.* t. 2402, 2923.—Walp. *Rep.* ii. 579, 958, 971 (*Conyza*); vi. 122; 132 (*Laennecia*), 133 (*Conyza*); *Ann.* ii. 406, 834); v. 181; 195 (*Laennecia*), 196 (*Conyza*).

[1] *Inst.* 490, t. 280; *Cor.* 37.—L. *Gen.* n. 962. —DC. *Prodr.* v. 304.—Endl. *Gen.* n. 2348.—B. H. *Gen.* ii. 265, n. 117.—*Kyrberia* Neck. *Elem.* i. 42.—*Astrantium* Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 312.—*Seubertia* Wats. *Hook. Lond. Journ.* iii. 602.

[2] Concerning the histogeny of which see Lanessan, *Bull. Soc. Linn. Par.* 92.

[3] White, pink, bluish, violet, purplish, or rarely (?) yellowish.

[4] Yellow or rarely purplish.

[5] Sections of the genus are:

Bellium L. *Mantiss.* 157.—DC. *Prodr.* v. 303. —Endl. *Gen.* n. 2347.—B. H. *Gen.* ii. 265, n. 118.—? *Belliopsis* Pom. *Mat. Fl. atl.* 7: involucral bracts sub-2-seriate herbaceous; pappus hairs unequal alternating with as many or a few transparent pales; other characters of *Eubellis.* (*Medit. reg.*)

Lagenophora Cass. *Bull. Soc. philom.* (1818), 34; *Dict.* xxv. 109.—Less. *Syn.* 193.—DC. *Prodr.* v. 307.—Endl. *Gen.* n. 2351.—B. H. *Gen.* ii. 263, n. 113.—*Ixauchemus* Cass. *Dict.* lvi. 176.—*Microcalia* A. Rich. *Fl. N.-Zel.* 230, t. 30.—*Solenogyne* Cass. *Dict.* lvi. 174.—*Emphysopus* Hook. f. *Hook. Lond. Journ.* vi. 113: leaves and inflorescence of *Eubellis*; bracts of rather broader involucre subequal, 1–2-seriate; fruit narrowed to apex or rostrate, epappous. (*South. Asia, Australia, and antarc. America.*)

Brachycome Cass. *Dict. sc. nat.* v. Suppl.

(*Europe, south. north. and west. ins. Africa, Australia, N. Zealand, N. America.*[1])

131? **Erodiophyllum** F. Muell.[2]—Flowers 2-morphous, all fertile; the radial[3] female; the discal numerous hermaphrodite sterile; corolla tubular, and the outer fertile female; corolla abortive. Style branches in flowers without corolla capillary; in hermaphrodite flowers more clavate. Fruit oblong papillulose; pappus 0.—A hispid shrub (?); leaves crowded, pinnatilobed; laciniæ lobulate; capitules (rather large) terminal solitary pedunculate; receptacle convex; involucral bracts few (to 8), 1-seriate, lanceolate, concrete at base.[4] (*Centr. Australia.*[5])

132. **Keerlia** A. Gray.[6]—Flowers 2-morphous; the radial female fertile; corolla ligulate subentire open; the discal hermaphrodite, sterile or fertile; limb of tubular corolla slightly expanded, 5-fid, valvate. Style branches of hermaphrodite flower flattened, obtusely or narrowly lanceolate appendiculate. Fruit

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63; xxxvi. 491.—DC. *Prodr.* v. 305.—Endl. *Gen.* n. 2349.—B. H. *Gen.* ii. 264, n. 116.—*Brachyscome* Cass. *Bull. Soc. philom.* (1816), 199.—*Paquerina* Cass. *Dict.* xxxvii. 492.—*Brachystephium* Less. *Syn.* 388.—*Steiroglossa* DC. *Prodr.* vi. 38.—*Silphiosperma* Steetz, *Pl. Preiss.* i. 433: bracts of broad involucre sub-2-seriate, scarious or dry at margin; discal fruit fertile; pappus 0 or consisting of a short ring of hairs; stem herbaceous nearly leafless; leaves rosulate; or sometimes erect branched; leaves alternate; capitules solitary or corymbiform cymose. (*Trop. Africa, Australia, N. Zealand.*)

Steirodiscus Less. *Syn.* 251.—DC. *Prodr.* vi. 74.—Endl. *Gen.* n. 2675.—B. H. *Gen.* ii. 264, n. 115: stem annual branched; leaves pinnatisect; involucre of *Brachycome;* fruit epappose; discal sterile; capitules at ends of twigs few loosely cymose. (*South. Africa.*)

Garuleum Cass. *Dict.* xviii. 162.—DC. *Prodr.* v. 309.—Endl. *Gen.* n. 2354.—B. H. *Gen.* ii. 263, n. 114: stem few-branched herbaceous; leaves pinnatilobed, or dissected; capitules solitary or loosely cymose; bracts of broad involucre few-seriate; fruit epappose; discal sterile. (*South. Africa.*)

[1] Spec. about 60. Viv. *Fl. ital. Fragm.* t. 10 (*Bellium*).—Mor. *Fl. sard.* t. 79 (*Bellium*).—Desf. *Fl. atl.* ii. t. 235, f. 1 (*Doronicum*).—Sweet, *Brit. fl. Gard.* ser. 2, t. 175, 278 (*Bellium*).—Ten. *Fl. nap.* t. 194.—Reichb. *Ic. Fl. germ.* t. 918, 919.—Jacq. *Ic. rar.* i. t. 179 (*Osteospermum*).—Lhér. *St. nov.* t. 6 (*Osteospermum*).—Saund. *Refug.* t. 252 (*Bellium*).—Labill. *N.-Holl.* ii. t. 204-207.—Hook. f. *Fl. tasman.* i. t. 49 (*Brachycome, Lagenophora*); *Handb. N.-Zeal. Fl.* 136 (*Lagenophora*), 137 (*Brachycome*); *Fl. antarct.* t. 108 (*Lagenophora*). Hook. *Exot. Fl.* iii. t. 215 (*Brachycome*).—Harv. and Sond. *Fl. cap.* iii. 92 (*Garuleum*), 159 (*Steirodiscus*).—Benth. *Fl. austral.* iii. 506 (*Lagenophora*).—A. Gray, *Proc. Amer. Acad.* v. 121; vii. 172 (*Lagenophora*).—Pœpp. et Endl. *Nov. gen. et spec.* i. t. 26 (*Lagenophora*).—Wedd. *Chl. andin.* i. 186, t. 32 (*Lagenophora*).—Boiss. *Voy. Esp.* t. 91; *Fl. or.* iii. 173.—A. Gray, *Man.* (1856), 200.—Remy, *C. Gay Fl. chil.* iv. 30 (*Lagenophora*).—Lge, *Pl. nov. hisp.* t. 26.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 30; 32 (*Bellium*).—Gren. et Godr. *Fl. de Fr.* ii. 104 (*Bellium*), 105.—Bonn. *Bull. Soc. bot. Fr.* xxv. 206.—*Bot. Reg.* t. 1025 (*Pyrethrum*); (1841), t. 9 (*Brachycome*).—*Bot. Mag.* t. 2174, 2511, 6015.—Walp. *Rep.* vi. 125, 718 (*Bellium ?*); *Ann.* ii. 827; v. 186.

[2] *Fragm. phyt. Austral.* ix. 119.—B. H. *Gen.* ii. 1232, n. 115 *a*.

[3] White, long.

[4] A genus (unknown to us) according to author, very near *Garuleum* and *Steirodiscus*.

[5] Spec. 1. *E. Elderi* F. Muell.

[6] *Pl. Lindheim.* ii. 221; *Pl. Wright.* i. 92 (not DC.).—B. H. *Gen.* ii. 262, n. 110.

more or less compressed, sometimes nerve-margined; faces smooth or nerve-striated; pappus small crownlike or 0.—Glabrous or pilose annuals; branches sometimes very slender; leaves alternate sometimes sessile; capitules[1] terminal solitary pedunculate or axillate cymose and filiform-stipitate.[2] (*Mexico.*[3])

133 ? **Aphanostephus** DC.[4]—Flowers nearly of *Bellis*, 2-morphous fertile; the radial female, 1–2-seriate; tube of ligulate corolla[5] sometimes thickened after anthesis; limb narrow entire open; the discal hermaphrodite; corolla tubular; teeth of expanded limb 5, valvate. Style branches flattened, shortly and obtusely appendiculate. Fruit subterete or obtusely angled, ∞-costate glabrous; pappus coroniform or very short (sometimes 0); teeth minute.—Herbs, oftener perennial, branched puberulous; leaves white-hairy; capitules terminal solitary; receptacle more or less convex and bare; bracts of subhemispherical involucre few-seriate unequal, scarious at apex and margins; the outer shorter. (*Mexico.*[6])

134. **Rhynchospermum** Reinw.[7]—Flowers fertile 2-morphous; the radial irregular female, 2–3-seriate; corolla[8] widely ligulate or sometimes unequally divided; the discal hermaphrodite; corolla[9] campanulate, 4–5-fid. Style branches of hermaphrodite flowers flattened, shortly and obtusely appendiculate. Fruit compressed, nerve-like at margin, faces nerveless, contracted at apex to a more or less elongate beak, and crowned with a pappus of few barbellate caducous hairs (or 0).—A branching, puberulous or glabrous herb; leaves entire, shortly petiolate, lanceolate entire; capitules (small) in axils of uppermost sometimes bractlike leaves of branches, pedunculate or subsessile and thence in a terminal leafy raceme. (*Mount. India, Java, Japan.*[10])

135. **Grangea** Adans.[11]—Flowers all fertile, 2-morphous; the

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[1] Small.

[2] Concerning the affinity of the genus with *Chætopappus* see p. 137, not. 8.

[3] Spec. 2. Walp. *Ann.* ii. 828; v. 188.

[4] *Prodr.* v. 310.—Endl. *Gen.* n. 2356.—B. H. *Gen.* ii. 262, n. 109.—*Keerlia* DC. *Prodr.* v. 309 (part. not A. Gray).—*Leucopsidium* DC. *Prodr.* vi. 43.

[5] "White."

[6] Spec. 3. Delless. *Ic. sell.* iv. t. 18 (*Keerlia*).—Hook. *Icon.* t. 240 (*Keerlia*).—Torr. *Marcy Exp. Bot.* t. 8.—Walp. *Rep.* ii. 635.

[7] *Bl. Bijdr.* 902 (not A. DC.).—B. H. *Gen.* ii. 263, n. 112.—*Leptocoma* Less. *Linnæa*, vi. 130; *Syn.* 188.—DC. *Prodr.* v. 280, 296.—Endl. *Gen.* n. 2326.—*Zollingeria* Sch. bip. *Flora* (1854), 273.

[8] White, minute.

[9] Yellow.

[10] Spec. 1. *R. verticillatum* Reinw.—*Leptocoma racemosa* Less. et Nees.—*Lavenia rigida* Wall. *Cat.* n. 325 (ex DC.).

[11] *Fam. des pl.* ii. 121.—Cass. *Dict.* xix. 304.—Less. *Syn.* 201.—DC. *Prodr.* v. 373.—Endl. *Gen.* n. 2397.—B. H. *Gen.* ii. 261, n. 106.—*Pyrarda* Cass. *loc. cit.* xli. 120.

radial female, 1–∞-seriate; corolla[1] slender filiform and shorter than style, in outer flowers 2-fid at apex, in inner 2–4-fid and scarcely rising above the disk; the discal hermaphrodite regular; corolla[2] tube thin; limb more or less dilated, 4–5-fid, valvate. Style branches of hermaphrodite flowers flattened or subcuneate, obtuse or shortly 3-angularly appendiculate. Fruit somewhat compressed; pappus consisting of a short cupule, cartilaginous or paleaceous at base, or of short very caducous hairs.—Annual or perennial herbs, erect or creeping, oftener villose; leaves alternate, sinuate, dentate, incised, pinnatifid, sinuately or lyrately pinnatisect; lobes often rather broad; capitules[3] subglobular, terminal, lateral or opposite leaves, sessile or stipitate; receptacle convex, more rarely subglobular or more or less deeply conical, bare or sparsely paleaceous; bracts of subcampanulate or more rarely narrow-tubular or ovoid involucre few-seriate, subequal, or the outer foliaceous.[4] (*Asia, Africa and trop. and subtrop. America.*[5])

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[1] White.

[2] Yellow, violet, or rarely purple.

[3] Small or moderate.

[4] A genus closely connecting the *Anthemideæ* with the *Asteroideæ* (B. H.). Sections (sometimes scarcely defined) are:

Ceruana Forsk. *Fl. æg.-arab.* 153.—DC. *Prodr.* v. 488.—Less. *Syn.* 202.—Endl. *Gen.* n. 2444 —B. H. *Gen.* ii. 261, n. 107: receptacle nearly flat; sparsely paleaceous between the flowers; pappus annular subcartilaginous setosely dentate; stem herbaceous rigid; outer bracts of involucre sometimes foliaceous. (*Trop. Africa.*)

Cyathocline Cass. *Dict.* lx. 595.—DC. *Prodr.* v. 374.—Endl. *Gen.* n. 2398.—B. H. *Gen.* ii. 261, n. 105: fruit oblong immarginate erostrate; stem herbaceous oftener annual; leaves pinnatisect (odorous); receptacle raised, subcontracted within the margin; disk slightly concave. (*E. India.*)

Dichrocephala DC. *Guillem. Arch. bot.* ii. 517; *Prodr.* v. 371.—Endl. *Gen.* n. 2396.—B. H. *Gen.* ii. 260, n. 104: fruit compressed erostrate, nerve-margined; pappus 0, or in hermaphrodite flowers sometimes 1–2-setose; receptacle raised or subspherical, contracted within margin; disk nearly flat; stem herbaceous annual; leaves dentate or lyrately pinnatifid. (*Trop. Asia and Africa.*)

Microtrichia DC. *Prodr.* v. 366.—Endl. *Gen.* n. 2388.—B. H. *Gen.* ii. 260, n. 103: fruit erostrate; pappus hairs few subpaleaceous, very caducous; stem herbaceous hard; leaves of *Eugrangea*. (*Trop. Africa.*)

Myriactis Less. *Linnæa*, vi. 127; *Syn.* 193. —DC. *Prodr.* v. 308.—Endl. *Gen.* n. 2353.—B. H. *Gen.* ii. 262, n. 111.—*Botryadenia* Fisch. et Mey. *Ind. sem. H. petrop.* ii. 30: radial flowers ligulate, 2–∞-seriate, minute; fruit erostrate or very shortly rostrate, epappose; stem annual; leaves coarsely dentate; capitules terminal loosely cymose or subracemose; involucral bracts narrow few-seriate; receptacle convex, subcontracted with margin, bare. (*Trop. Asia and Africa.*)

Egletes Cass. *Bull. Soc. philom.* (1817), 153; *Dict.* xiv. 265.—Less. *Syn.* 252.—DC. *Prodr.* vi. 42.—Endl. *Gen.* n. 2659.—B. H. *Gen.* ii. 261, n. 108.—*Eyselia* Reichb. *Ic. exot.* iii. 15, t. 242.—*Xerobius* Cass. *Dict.* lix. 127.—*Platystephium* Gardn. *Hook. Lond. Journ.* vii. 80: corolla of female flowers ligulate; fruit surmounted by a short annular or crownlike pappus; stem herbaceous or creeping (of *Eugrangea*); capitules solitary or cymose few; involucral bracts few-seriate; outer herbaceous. (*Trop. America.*)

[5] Spec. about 20. Jacq. *Hort. vindob.* t. 88 (*Tanacetum*).—Wight, *Icon.* t. 1091 (*Myriactis*), 1095, 1096 (*Dichrocephala*), 1097; 1098, 1150 (*Cyathocline*).—Del. *Fl. egypt.* t. 48, fig. 2 (*Buphthalmum*).—Reg. *Sert. petrop.* t. 23 (*Myriactis*).—Boiss. *Fl. or.* iii. 175 (*Myriactis*, *Dichrocephala*), 176, 177 (*Ceruana*).—Fr. et Sav. *En. pl. jap.* i. 229 (*Dichrocephala*).—Harv. and Sond. *Fl. cap.* iii. 114 (*Dichrocephala*).—Miq. *Fl. ind.-bat.* ii. 33 (*Myriactis*), 36 (*Dichrocephala*),

136. **Læstadia** K.[1]—Flowers[2] all fertile, 2-morphous; the radial female, sub-2-seriate; the discal hermaphrodite; corollas of all regular or subregular, subcampanulate; lobes 4, 5, valvate, recurved; the discal similar thinner. Style branches of hermaphrodite flowers compressed, narrow or 3-angularly appendiculate. Radial fruit somewhat compressed, 5–10-costate glabrous; the discal thinner, oftener abortive, all without pappus.—Undershrubs or herbs, creeping or cæspitose; leaves alternate or subopposite, often ericoid (small), entire crowded; capitules solitary terminal on a bare peduncle; receptacle flat or convex bare; bracts of subhemispherical involucre unequal or subequal narrow, dry at margin, sub-2-seriate. (*Andine S. America.*[3])

137. **Chrysocoma** L.[4]—Flowers all fertile, 1-morphous or more rarely (*Nolletia*[5]) 2-morphous; the radial female; corolla[6] slender, shorter than style or subequally 2–3-fid or dentate, oftener 0; the discal hermaphrodite; corolla tubular regular; limb 5-fid, valvate. Style (rarely undivided) branches flattened, lanceolately or 3-angularly appendiculate. Fruit compressed, nerve margined, faces nerveless or more rarely 1-nerved; pappus hairs ∞, 1–3-seriate, unequal, scabrous or ciliolate.—Herbs or oftener shrublets; leaves alternate, linear, subulate or pinnatifid; capitules solitary or corymbiform cymose; inflorescence sometimes leafy; receptacle flat or slightly convex, bare or sparsely foveolate; involucre often hemispherical, bracts few-seriate unequal, oftener scarious at margin; the outer smaller.[7] (*S. Africa, Canary isl., Medit. reg.*[8])

138. **Adelostigma** Steetz.[9]—Flowers[10] 2-morphous; the radial female fertile, ∞-seriate; the discal hermaphrodite few (sterile?). Corollas of radial flowers filiform, minutely 3–4-dentate, much

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37.—Oliv. and Hiern. *Fl. trop. Afr.* iii. 302 (*Microtrichia, Dichrocephala*), 304 (*Cervana*).—Walp. *Rep.* ii. 635 (*Egletes*); vi. 719 (*Myriactis*); *Ann.* i. 409 (*Cyathocline*), ii. 834; v. 195 (*Dichrocephala*).

[1] *Less. Syn.* 203.—B. H. *Gen.* ii. 260, n. 102.—*Lestadia* DC. *Prodr.* v. 374.—Endl. *Gen.* n. 2399.

[2] "Violet."

[3] Spec. 4. Wedd. *Chl. andin.* i. 183, t. 32.—Walp. *Rep.* vi. 132.

[4] *Gen.* n. 939.—Cass. *Dict.* xxxvii. 77.—Less. *Syn.* 195.—DC. *Prodr.* v. 353.—Endl. *Gen.* n. 2385.—B. H. *Gen.* ii. 286, n. 162.

[5] Cass. *loc. cit.* xxxvii. 479.—Less. *Syn.* 187.—DC. *Prodr.* v. 366.—Endl. *Gen.* n. 2389.—B. H. *Gen.* ii. 285, n. 161.—*Leptothamnus* DC. *Prodr.* v. 367.—Endl. *Gen.* n. 2391.

[6] As in disk, yellow.

[7] Sect. of the genus is *Heteromma* Benth. *Gen.* ii. 286, n. 163.—*Heteropsis* (*Chrysocomæ* sect.) Harv. *Fl. cap.* iii. 95, not K.), a species connecting *Nolletia* with *Nidorella*; leaves decurrent; involucral bracts few-seriate narrow imbricate; the inner membranous to apex; pappus 2–3-seriate.

[8] Spec. about 12. Desf. *Fl. atlant.* t. 232 (*Conyza*).—Harv. and Sond. *Fl. cap.* iii. 93, 111 (*Leptothamnus*).—*Bot. Mag.* t. 1972.

[9] *Pet. Mossamb. Bot.* 428.—B. H. *Gen.* ii. 285, n. 159.—*Cancellaria* Sch. bip. herb. Mus. par.

[10] "Pink."

shorter than style; those of discal flowers thin elongately tubular; limb but slightly open, very shortly 5-fid. Anthers shortly auriculate at base not caudate. Style of hermaphrodite flowers very shortly 2-lobed or undivided. Fruit oblong subterete scarcely costate villosulous; pappus hairs shortly connate or thickened at base, deciduous in a ring, 1-seriate.—Rather rigid annuals; stem angular or narrowly alate or bare; leaves alternate linear, remotely and shortly pectinately pinnatifid, sometimes entire, sessile or narrowly decurrent; capitules[1] terminal, surrounded by floral leaves; receptacle slightly convex foveolate; bracts of broadly campanulate involucre ∞, dissimilar, ∞-seriate; the inmost narrow transparent; the outermost foliaceous, long linear-foveolate. (*Trop. Africa.*[2])

139. **Haastia** Hook. f.[3]—Flowers fertile, 2-morphous; the radial female, ∞-seriate; corolla filiform much shorter than exserted style, minutely dentate; the discal few hermaphrodite fertile; corolla tubular, scarcely unfolded above, 5-fid. Style branches of hermaphrodite flowers long and narrow, papillose at back, shortly or rather longer subteretely rather obtusely appendiculate. Fruit narrow subterete glabrous, obscurely 4–5-costate; pappus hairs thin, generally thickened towards the apex, 1-seriate. —Low perennial herbs cæspitosely or pulvinately branched or contracted, densely lanate or villose; branches densely leaved; leaves crowded, alternate, entire, obtuse, thick and soft; capitules solitary sessile terminal; receptacle nearly flat bare; bracts of subcampanulate involucre imbricate dissimilar; the inmost narrow, glabrous membranous at apex; the outermost short and externally densely villose.[4] (*N. Zealand.*[5])

140. **Thespis** DC.[6]—Flowers[7] fertile, 2-morphous; the radial female, in many series, apetalous or with rudimentary corolla; the discal regular hermaphrodite or male; limb of corolla narrowly campanulate; lobes 4, valvate. Style branches of hermaphrodite flowers short flattened, papillose at back, rather acute

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[1] Rather large.

[2] Spec. 2. Benth: *Hook. Icon.* t. 1144.—Oliv. and Hiern. *Fl. trop. Afr.* iii. 320 (leaves in a Mozambique species sometimes entire.

[3] *Handb. N.-Zeal. Fl.* 155, *Hook. Icon.* t. 1003; *Gen.* ii. 284, n. 157.

[4] *Gnaphalieæ* and closely connecting them with *Astereæ*, closely allied also apparently with *Nidorella*.

[5] Spec. 3.

[6] *Guillem. Arch. bot.* ii. 517; *Prodr.* v. 375. —Deless. *Ic. sel.* iv. t. 20.—Endl. *Gen.* n. 2401.—B. H. *Gen.* ii. 285, n. 160.

[7] Yellow.

or obtuse at apex. Discal fruit effete; radial oblong obscurely costate; pappus hairs in ray few (10-12) short, more or less dilated at base, 1-seriate; in disk fewer (sometimes 1, 2) unequal. —Glabrous branched annuals; leaves alternate, serrately dentate; capitules in contracted radiating cymes; cymes sub-2-chotomous, externally leafy; receptacle slightly convex bare; involucral bracts sub-2-seriate unequal; the outer more herbaceous. (*E. India.*[2])

141. Psiadia Jacq.[3]—Flowers 2-morphous; the radial female fertile, 1–∞-seriate (sometimes 0); corolla[4] oftener ligulate, sometimes shorter than style or more rarely longer and open; the discal hermaphrodite few or ∞, sterile or more rarely fertile; limb of tubular corolla[5] somewhat expanded, 5-fid, valvate. Style branches of hermaphrodite flowers flattened, variously appendiculate; of the female narrower, sometimes unequal. Fruit subterete or oftener few-angled; the discal effete; pappus hairs ∞, thin, 1–2-seriate, minutely barbellate.—Erect or sometimes climbing shrubs, glabrous or variously clothed, sometimes glutinous; leaves alternate, oval or lanceolate, entire or dentate; capitules in corymbiform cymes, sometimes contracted; bracts of subcampanulate involucre 2–∞-seriate, unequal; the outer more acute shorter; the inner larger, sometimes more obtuse; receptacle nearly flat, bare or more rarely fringed.[6] (*Asia and trop. esp. east. ins. Africa.*[7])

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[1] Very small.

[2] Spec. 1. *T. divaricata* DC.—*T. erecta* DC. —*Cotula divaricata* Wall. *Cat.* n. 3238.—*C. sinapifolia* Wall. *Cat.* n. 3227 (part.).

[3] *Hort. schœnbr.* ii. 13, t. 152.—Less. *Syn.* 190.—DC. *Prodr.* v. 318.—Endl. *Gen.* n. 2368. —B. H. *Gen.* ii. 284, n. 158.—*Elphegea* Cass. *Dict.* xiv. 361.—*Sarcanthemum* Cass. *Bull. Soc. philom.* (1818), 74; *Dict.* xlvii. 349.—Less. *Syn.* 191.—Endl. *Gen.* n. 2390.—*Thouarsia* Vent. herb.—*Alix* Commers.—*Glutinaria* Commers. herb. (ex DC.).

[4] Whitish or yellowish. [5] Yellow or pale.

[6] A genus scarcely, if at all, except in habit, distinct from some *Conyzæ*. Sometimes it closely resembles certain American *Baccharides*. Sections are:

Frappiera J. de Cordem., *Adansonia*, x. 21: leaves soft more or less hirsute, dentate or crenate; radial fruit compressed, thick-angled; the discal (abortive) slenderly cylindrical. (*East. trop. insul. Africa.*)

Glyciderас Cass. *Dict.* lix. 74.—DC. *Prodr.* vii. 257.—B. H. *Gen.* ii. 259, n. 101.—H. Bn, *Bull. Soc. Linn. Par.* 271.—*Glyphia* Cass. *Bull. Soc. philom.* (1818); *Dict.* xix. 108.—Endl. *Gen.* 503.—*Microglossa* DC. *Prodr.* v. 320.—B. H. *Gen.* ii. 282, n. 154.—*Frivaldia* Endl. *Gen.* n. 2369: branches loose or climbing; leaves ovate or lanceolate, glabrous or puberulous; cymes of capitules sometimes large corymbiform; radial flowers 1–∞-seriate; ligules subequal to style entire. (*Trop. Asia and Africa.*)

Henricia Cass. *Bull. Soc. philom.* (1817), 11; (1818), 123: *Dict.* xx. 567.—DC. *Prodr.* v. 268.—Nees, *Aster.* 219.—Endl. *Gen.* n. 2313. —B. H. *Gen.* ii. 277, n. 143.—H. Bn, *Bull. Soc. Linn. Par.* 271: stem subshrubby; leaves ovate-lanceolate serrate scabrous; capitules loosely corymbiform-cymose; receptacle shortly fringed; involucral bracts few-seriate; the inner larger obtuse membranous glabrous; the outer thicker subherbaceous hirsute; ligules entire or few-dentate, radial flowers 1–2-seriate and discal fertile; fruit rather compressed angulate. (*Madagascar.*)

[7] Spec. 18-20. Lamk, *Dict.* ii. 91, n. 43

142. **Baccharis** L.[1]—Flowers[2] diœcious, or hermaphrodite sterile; corolla regular tubular; limb narrow-campanulate, 5-fid; or the female fertile; corolla slender tubular and shorter than style. Anthers emarginate at base or entire obtuse. Style (sometimes undivided) branches of hermaphrodite flowers short narrow, often pointed, hairy or papillose at back. Fruit terete or oftener slightly compressed, either 10-costate, or (by the absence of some of the secondary ribs) 5–8-costate, glabrous or villose; pappus hairs thin, 1–∞-seriate.[3]—Shrubs or undershrubs; of various habit, sometimes cæspitose or subscandent, either glabrous or glutinous, or variously clothed; leaves alternate, rarely subopposite or subverticillate, sessile, petiolate, or more or less wide decurrent on angular or alate stem and on branches, sometimes scalelike, very small or 0, entire or variously dentate or serrate; capitules[4] sessile, lateral or axillar to uppermost leaves, sometimes terminal in branched or corymbiform cymes, more rarely terminal solitary; in various specimens all male or female; receptacle flat or slightly convex, bare or foveolate, sometimes fringed between the flowers or more rarely (in female plant) paleaceous (*Heterothalamus*[5]); bracts of ovoïd, oblong, hemispherical or sometimes subcampanulate involucre ∞, imbricate, 2–∞-seriate; the outer gradually or scarcely smaller. (*Trop. and extra trop. N. and S. America.*[6])

143? **Parastrephia** Nutt.[7]—Flowers polygamo-submonœcious

(*Conyza*).—DC. *Prodr.* v. 323 (*Nidorella*, n. 18), 385, 386 (*Conyza* part.); vii. 279 (*Amphiraphis*).—Arn. *Pug.* n. 99 (*Conyza*).—Jaub. et Spach, *Ill. pl. or.* t. 352, 353.—Kurz, *For. Fl. brit. Burm.* ii. 81 (*Microglossa*).—Boj. *Hort. maur.* 178.—Klatt, *Ann. sc. nat.* sér. 5, xviii. 365.—Stertz, *Vet. Moss. Bot.* 385.—Miq. *Fl. ind.-bat.* ii. 34 (*Microglossa*).—Bak. *Fl. maur.* 170.—Oliv. and Hiern, *Fl. trop. Afr.* iii. 308 (*Microglossa*), 319.—Walp. *Ann.* v. 192.

[1] *Gen.* n. 949.—DC. *Prodr.* v. 308.—Endl. *Gen.* n. 2410.—B. H. *Gen.* ii. 286, n. 165.—*Sergilus* Gærtn. *Fruct.* ii. 409, t. 174.—*Molina* R. et Pav. *Prodr. Fl. per.* iii. t. 24 (not of others).—*Tursenia* Cass. *Dict.* xxxvii. 480.—*Pingræa* Cass. *loc. cit.* xli. 57.—*Arrhenachne* Cass. *loc. cit.* lii. 253.—*Stephananthus* Lehm. *Ind. sem. Hort. hamburg.* (1826), 18; *Nov. Acta nat. Cur.* xiv. 821.—*Polypappus* Less. *Linnæa*, iv. 314; vi. 149.—DC. *Prodr.* v. 398.

[2] White, yellowish, or reddish.

[3] In a male specimen few, 1-seriate, unequal, tortuous or fragile.

[4] Moderate or small.

[5] Less. *Linnæa*, v. 145; *Syn.* 295.—DC. *Prodr.* v. 216; vii. 271.—Endl. *Gen.* n. 2295.—B. H. *Gen.* ii. 287, n. 166: capitules polygamo-diœcious; pale more or less surrounding its axillar flower.

[6] Spec. about 220. Jacq. *Collect.* iii. t. 22 (*Chrysocoma*).—Vahl, *Symb.* iii. t. 74.—H. B. K. *Nov. gen. et spec.* iv. t. 322-325.—Hook. *Bot. Misc.* ii. t. 94; *Icon.* t. 241.—Coll. *Mem. Accad. torin.* xxxviii. t. 25 *bis*.—Ad. Br. *Duperr. Voy. Coq. Bot.* t. 61, 62.—Hombr. et Jacquin, *Voy. Pôle sud, Bot.* t. 26.—Torr. *Whippl. Exp. Bot.* 45; *Sitgr. Exp. Bot.* 162.—A. Gray, *Emor. Exp. Bot.* 83; *Proc. Amer. Acad.* v. 123; *Man.* (ed. 1856), 208.—Chapm. *Fl. S. Unit. St.* 217.—Remy, *C. Gay Fl. chil.* iv. 77.—Phil. *Fl. atacam.* 30; *Linnæa*, xxviii. 738; xxxiii. 145.—Griseb. *Fl. brit. W.-Ind.* 366; *Symb. Fl. argent.* 180.—Wedd. *Chlor. andin.* i. 167, t. 28, 29; 178, t. 31 (*Heterothalamus*).—Walp. *Rep.* ii. 558 (*Heterothalamus*), 595; vi. 135; *Ann.* i. 410; ii. 838; v. 197.

[7] *Trans. Amer. Phil. Soc.* sér. 2, vii. 449.—B. H. *Gen.* ii. 286, n. 164.

(nearly of *Baccharis*); corolla of hermaphrodite tubular, 5-lobed; of the female filiform, 2-dentate. Style branches of hermaphrodite flowers linear, narrowly appendiculate (or undivided ?). Fruit linear compressed villose; pappus hairs of female flowers ∞, thin, scarcely unequal, ∞-seriate; of hermaphrodite duplicate the outer subpaleaceous short; the inner elongate scabrous or shortly barbellate, sub-1-seriate.—An ericoid shrub; covering floccose, deciduous; leaves alternate numerous rather thick obtuse, revolutely adnate at margins, sub-3-quetrous, externally glabrous; capitules at top of twigs solitary or few; bracts of oblong or subcampanulate involucre ∞, unequal linear-oblong; the outer gradually smaller. (*Peru.*[1])

144. **Pteronia** L.[2]—Flowers[3] hermaphrodite, 1-morphous; limb of regular corolla narrowly campanulate, 5-lobed, valvate. Anthers obtuse at base entire. Style branches flattened, short or long-lanceolately appendiculate, oftener produced exserted, everywhere papillose. Fruit[4] obconical or compressed, thinly costate, more or less contracted at apex; pappus hairs ∞, 1-∞-seriate, unequal, thinly barbellate, connate in a ring at base, or sometimes paleaceous-dilated. — Glabrous shrubs,[5] glutinous or hirsute; leaves opposite or alternate, entire or ciliolately serrulate, stiff, often narrow; capitules[6] terminal, solitary or corymbiform cymose; receptacle flat or convex, foveolate and often shortly fringed; bracts of ovoid or oblong or more rarely subcampanulate involucre ∞, imbricate, coriaceous or scarious; the outer gradually smaller. (*S. Africa.*[7])

145. **Fresenia** DC.[8]—Flowers[9] hermaphrodite (nearly of *Pteronia*[10]), 1-morphous; fruit compressed, veinless except at nervelike margins; pappus hairs ∞, 2-morphous; the inner sparsely barbellate, 1-seriate; the outer very short, generally

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[1] Spec. 1, unknown to us, *P. ericoides* NUTT.—WALP. *Rep.* ii. 505; vi. 134.—*Vernonia phylicæformis* WALP. *Nov. Acta Acad. Leop.-Car.* xix. Suppl. i. 252; *Rep.* vi. 89 (?an anomalous *Baccharis* ?).

[2] *Gen.* n. 937.—DC. *Prodr.* v. 356.—ENDL. *Gen.* n. 2386.—B. H. *Gen.* ii. 259, n. 99.—*Scepinia* NECK. *Elem.* i. 78.—CASS. *Dict.* xxxvii. 475.—*Pterophora* NECK. *Elem.* i. 78.—CASS. *Dict.* xxxvii. 474.—*Pachyderis* CASS. *Dict.* lvi. *us* LESS. *Syn.* 195.

[3] Yellow or purplish.

[4] Glabrous or villose.

[5] Often ericoid.

[6] Small, moderate, or rather large.

[7] Spec. about 50. THUNB. *Fl. cap.* 627 (*Eupatorium*), 629; 713 (*Osteospermum*).—BURCH. *Cat. geogr.* 1495.—SPRENG. *Syst.* iii. 628 (*Osteospermum*).—HARV. and SOND. *Fl. cap.* iii. 95.

[8] *Prodr.* v. 328.—ENDL. *Gen.* n. 2374; *Iconogr.* t. 35.—B. H. *Gen.* ii. 258, n. 98.

[9] Yellow.

[10] Of which perhaps rather a sect. (?).

subpaleaceous.—A small (ericoid) glabrous shrub; leaves opposite or alternate crowded; capitules terminal solitary; receptacle slightly convex sparsely foveolate; bracts of subcampanulate involucre ∞, scarious at margin; the outer gradually smaller; other characters of *Pteronia*. (*S. Africa.*[1])

146. **Rochonia** DC.[2]—Flowers[3] 2-morphous; the radial female fertile;[4] corolla ligulate entire or very shortly 2–3-dentate; the discal hermaphrodite fertile or sterile;[5] corolla tubular, 5-fid. Style branches of hermaphrodite flowers flattened lanceolately appendiculate, sometimes papillose; branches of the female flowers more compressed, sometimes unequal glabrous. Fruit subterete, 4–5-costate; pappus hairs equal or unequal, very shortly barbellate, 1-seriate.—Shrubs; leaves alternate rather thick coriaceous, entire or sparsely dentate, penninerved, tomentose beneath; capitules at ends of twigs solitary or cymose few; entire inflorescence globularly subcorymbiform; receptacle minutely foveolate; bracts of subcampanulate involucre ∞, unequal, imbricate, scarious at margin; the outer gradually smaller; the inmost narrower dry. (*Madagascar.*[6])

147. **Solidago** L.[7]—Flowers[8] 2-morphous; the radial ligulate, 1-seriate female, often few or 0; the discal hermaphrodite fertile. Receptacle obconical, more or less alveolate above; bracts of elongate involucre ∞, imbricate, ∞-seriate, larger from the outer to the inner. Pappus hairs in all flowers ∞, thin, unequal, minutely scabrous, 1–2-seriate. Corollas regular tubular or narrowly campanulate; lobes of limb 5, narrow acute. Anthers apiculate obtuse or scarcely auriculate at base. Style in ligulate flowers thinner, inserted on a small disk; in regular flowers thicker; branches oblong, finally recurved, flattened, lanceolate-appendiculate. Fruit glabrous or rugose, terete, angular or many-ribbed.—Annual or oftener perennial herbs; leaves alternate, entire or dentate; capitules in a more or less branched or corym-

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[1] Spec. 2, 3. HARV. and SOND. *Fl. cap.* iii. 92.—BENTH. *Hook. Icon.* t. 1108.

[2] *Prodr.* v. 345.—ENDL. *Gen.* n. 2380.—B. H. *Gen.* ii. 259, n. 100.

[3] Yellow.

[4] Or "sterile" (B. H.).

[5] In our specimen without an ovule.

[6] Spec. 2.

[7] *Gen.* n. 955.—J. *Gen.* 181.—GÆRTN. *Fruct.* ii. 447, t. 170.—DC. *Prodr.* v. 330; vii. 279.—SPACH, *Suit. à Buffon*, x. 226.—ENDL. *Gen.* n. 2376.—B. H. *Gen.* ii. 256, n. 91.—*Virga aurea* T. *Inst.* 483, t. 275.—*Doria* ADANS. *Fam. des pl.* ii. 124 (not of others).—*Amphiraphis* DC. *Prodr.* v. 343 (part.).—*Chrysoma* NUTT. *Journ. Acad. nat. sc. Phil.* vii. 67; *Trans. Amer. Phil. Soc.* ser. 2, vii. 324.—*Euthamia* NUTT. *Gen.* ii. 162; *Torr. et Gr. Fl. N.-Amer.* ii. 226.

[8] Yellow or pale.

biform cymiferous raceme; receptacle small, generally alveolate, sometimes shortly fringed; bracts of oftener oblong involucre ∞, unequal, or herbaceous, or partly scarious or squamose at margin or apex.[1] (*Extra trop. N. and S. America, temp. Asia and Europe.*[2])

148. **Ericameria**, Nutt.[3]—Flowers[4] all fertile, 2-morphous; the radial female few; corolla ligulate open; the discal hermaphrodite; limb of regular corolla slightly open, 5-fid. Anthers obtuse at base. Style branches of hermaphrodite flowers narrow compressed, with subulate hirtellate appendages. Fruit subterete narrow, oftener glabrous; pappus hairs ∞, thin unequal, sub-2-seriate.—Small branching glabrous (ericoid) shrubs; leaves alternate, generally crowded, linear entire; capitules closely cymose; receptacle small alveolate; bracts of oblong or narrowly campanulate involucre ∞, unequal rigid, imbricate at scarious margin; the outer gradually shorter.[5] (*N. America.*[6])

149. **Lepidophyllum** Cass.[7]—Flowers[8] 2-morphous; the radial female fertile, 1-seriate; corolla irregular and not longer than style, 2-dentate or longer open, 2-lobed, sometimes (*Nardophyllum*[9]) 0; the discal hermaphrodite, fertile or sterile; limb of regular tubular corolla expanded, 5-fid, valvate. Style branches flattened, rather obtusely appendiculate, shortly papillose at back. Fruit somewhat terete or compressed, thinly costate; pappus hairs ∞, unequal, scabrous or ciliolate; the inner often longer and long barbellate.—Much-branched shrubs or undershrubs, glabrous or tomentose; leaves alternate or more rarely opposite, oftener narrow and entire, capitules terminal solitary or in a corymbiform, sometimes

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a Torr. et Gr. *Fl. N.-Amer.* ii. 194.—B. H. *Gen.* ii 236, n. 92, is a sect. of the genus with pappus shorter than the fruit.

[2] Spec. about 60 (enum. 100). Reichb. *Ic. Fl. germ.* t. 911, 913.—W. et Kit. *Ic. pl. hung.* t. 208.—Torr. et Gr. *Fl. N.-Amer.* ii. 195.—Torr. *Fl. N.-York*, t. 53–55.—A. Gray, *Man.* (ed. 1856), 200; *Proc. Amer. Acad.* vi. 543.—Chapm. *Fl. S. Unit. St.* 208.—Remy, *C. Gay Fl. chil.* iv. 39.—Phil. *Linnæa*, xxxiii. 138.—Seub. *Fl. azor.* t. 10.—Boiss. *Fl. or.* iii. 156.—Lge, *Pl. nov. hisp.* t. 25.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 38.—Gren. et Godr. *Fl. de Fr.* ii. 92.—Walp. *Rep.* ii. 589, 960; vi. 129; *Ann.* ii. 829.

[3] *Trans. Amer. Phil. Soc.* vii. 318.—B. H. *Gen.* ii. 255, n. 90. *Aster* and *Solidago* in the old herbar. (A. Gray, *Proc. Amer. Acad.* xvii. 164, 167.

[4] Yellow.

[5] A genus closely allied to *Haplopappus.*

[6] Spec. 3, 4. Torr. et Gr. *Fl. N.-Amer.* ii. 236.—DC. *Prodr.* v. 306, n. 4 (*Aplopappus*).—Walp. *Rep.* ii. 592.

[7] *Bull. Soc. philom.* (1816), 199; *Dict.* xxvi. 36 (not Ad Br.).—DC. *Prodr.* v. 314.—Endl. *Gen.* n. 2363.—B. H. *Gen.* ii. 257, n. 95.—*Tola* Wedd. (*Dolichogynes* sect.) *Chlor. andin.* i. 182, t. 30 A.—? *Polyclados* Phil. *Fl. atacam.* 34, t. 4.

[8] Where known, "yellow."

[9] Hook. and Arn. *Comp. Bot. Mag.* i. 109.—DC. *Prodr.* vii. 10.—Endl. *Gen.* 481, 1385.—B. H. *Gen.* ii. 257, n. 94.—*Dolichogyne* DC. *Prodr.* vii. 256.—*Anactinia* Remy, *C. Gay, Fl. chil.* iv. 8.

foliate cyme; receptacle small, more or less convex, bare, foveolate (or more rarely paleaceous ?), sometimes few-flowered; bracts of obconical, subcampanulate, or oftener narrow or oblong involucre imbricate, ∞-seriate, rigid or scarious, acute or more rarely slightly obtuse.[1] (*Trop. extra trop. and andine S. America.*[2])

150. **Hysterionica** W.[3]—Flowers[4] all fertile, 2-morphous; the radial female, 1–∞-seriate; corolla ligulate, sometimes paleaceous, entire or 2–3-dentate; the discal hermaphrodite; limb of tubular corolla more or less dilated, 5-dentate or 5-lobed. Style branches of hermaphrodite flowers more or less narrow flattened, with linear or lanceolate, sometimes shortly triangular appendage. Fruit more or less compressed or 3–5-angled or costate; pappus hairs ∞, or more rarely few, 1–∞-seriate; the outer generally subpaleaceous short, sometimes rigid or horny, caducous; the inner elongate thin (or 0).[5]—Annual or perennial herbs, or

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[1] Is not *Chiliophyllum* PHIL. *Linnæa*, xxxiii. 132.—B. H. *Gen.* ii. 258, n. 96, a sect. of this genus, a shrub of Mendoya in the Andes (unknown to us), much branched glutinous, with a "paleaceous" receptacle; all other characters apparently of *Lepidophyllum ?*

[2] Spec. about 12. A. GRAY, *Proc. Amer. Acad.* v. 122.—REMY, *C. Gay*, *Fl. chil.* iv. 37, t. 45.—WEDD. *Chlor. andin.* i. 180, t. 30 (*Dolichogyne*).

[3] *Berl. Mag.* (1807) 140.—DC. *Prodr.* vii. 258.—ENDL. *Gen.* 1391.—B. H. *Gen.* ii. 252, n. 86.—*Neja* D. DON, in *Sweet Brit. fl. Gard.* ser. 2, 78.—DC. *Prodr.* v. 325.—ENDL. *Gen.* n. 2372.

[4] Yellow, sometimes showy.

[5] Sections of the genus are:

Chrysopsis NUTT. *Gen. nov. amer.* ii. 150.—DC. *Prodr.* v. 326.—ENDL. *Gen.* n. 2373.—B. H. *Gen.* ii. 252, n. 85.—*Ammodia* NUTT. *Trans. Amer. Phil. Soc.* ser. 2, vii. 321.—*Macronema* NUTT. *loc. cit.* 592.—*Pityopsis* NUTT. *loc. cit.* 317.—*Hectorea* DC. *Prodr.* v. 95.—ENDL. *Gen.* n. 2243.—*Heyfeldera* SCH. BIP. *Flora* (1853), 35: fruit generally narrow, sometimes compressed; pappus hairs ∞, unequal; the outer shorter or paleaceous; ligules broader than in *Euhysterionica;* style branches oftener subulately appendiculate; involucre broad or rather so. (*N. America.*)

Grindelia W. *Berl. Mag.* (1807), 250.—DC. *Prodr.* v. 314.—ENDL. *Gen.* n. 2364.—B. H. *Gen.* ii. 250, n. 79.—*Demetria* LAG. *Elench. H. matrit.* 30.—*Donia* R. BR. *Ait. H. kew.* ed. 2, v. 82.—*Aurelia* CASS. *Dict.* xxxvii. 468.—*Chrysophthalmum* PHIL. *Linnæa*, xxix. 9; xxxiii. 137 (not SCH. BIP.): fruit compressed or 3–5-angled; pappus hairs few elongate, rigid or rather hard, caducous; bracts of hemispherical involucre coriaceous or scarious at apex appressed, ∞-seriate. (*Extra trop. S. America.*)

Pentachæta NUTT. *Trans. Amer. Phil. Soc.* vii. 236.—B. H. *Gen.* ii. 251, 1232, n. 80: involucral bracts few-seriate; pappus hairs few rather stiff elongate unequal; stem annual tender; leaves linear. (*West. N. America.*)

Aphantochæta TORR. *Whippl. Exp. Bot.* 43 (90), t. 11.—B. H. *Gen.* ii. 251, n. 81; charact. of *Pentachæta:* involucral bracts few; corolla of female flowers filiform; pappus hairs few (to 5), shortly dentiform. (*California.*)

Bradburia TORR. et GR. *Fl. N.-Amer.* ii. 250 (not RAFIN.).—B. H. *Gen.* ii. 251, n. 83: radial fruit turbinately-3-cornered; pappus hairs in disk very few very short; in ray ∞, unequal, mostly short, ∞-seriate; bracts of subcampanulate involucre pluriseriate, scarious at margin; stem annual branched; leaves linear. (*Texas.*)

Heterotheca CASS. *Bull. Soc. philom.* (1817), 137); *Dict.* xxi. 130.—DC. *Prodr.* v. 316.—ENDL. *Gen.* n. 2365.—B. H. *Gen.* ii. 251, n. 84.—*Diplocoma* DON. *Sweet fl. Gard.* t. 246.—*Calycium* ELL. *Sk. bot. S.-Carol.* ii. 339: fruit compressed, generally rather thick; pappus hairs in ray few, caducous; in disk ∞, unequal; bracts of broadly hemispherical or campanulate involucre ∞, scarious at margin, ∞-seriate; stem herbaceous erect; leaves generally dentate; other characters as in *Chrysopsis.* (*N. America.*)

shrubby at base, glabrous or villose, sometimes glutinous; leaves alternate, linear or more or less broad, entire, dentate or ciliately serrate; capitules terminal solitary; involucre often hemispherical; bracts ∞, coriaceous or scarious at apex, appressed, ∞-seriate; the outer shorter; receptacle convex or nearly flat, bare or rather broadly or thinly foveolate. (*Warm and temp. N. and S. America.*[1])

151 ? **Steriphe** PHIL.[2]—Flowers[3] 2-morphous; the radial neuter, 1-seriate; corolla short[4] semi-involute entire; the discal

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Haplopappus CASS. *Dict.* lvi. 168 (*Aplopappus*).—DC. *Prodr.* v. 345; vii. 279 (part.).—ENDL. *Gen.* n. 2381.—B. H. *Gen.* ii. 253, n. 88.—*Pyrrocoma* HOOK. *Fl. bor.-amer.* i. 306, t. 107.—DC. *Prodr.* v. 350, 351 (part.).—*Homopappus* NUTT. *Trans. Amer. Phil. Soc.* ser. 2, vii. 330.—*Isopappus* TORR. et GR. *Fl. N.-Amer.* ii. 239.—*Eriocarpum* NUTT. *loc. cit.* vii. 320.—*Stenotus* NUTT. *loc. cit.* 334.—? *Hoorebekia* CORNEL. *Mussch. H. gand.* c. ic. (ex DC. *Prodr.* v. 346).—*Chroilema* BERNH. *Del. sem. H. erfurt.* (1840), ex *Linnæa*, xv. *Littbl.* 90.—*Homopappus* NUTT. *loc. cit.* 380: fruit scarcely or not compressed; pappus hairs ∞, polymorphous and very unequal; bracts of narrow or oftener broad involucre ∞, scaly or herbaceous at margin, ∞-seriate; stem herbaceous or subshrubby; leaves entire, ciliately dentate or sometimes pinnatifid. (*Extra trop. N. and S. America.*)

Xanthisma DC. *Prodr.* v. 94.—ENDL. *Gen.* n. 2242.—B. H. *Gen.* ii. 253, n. 87.—*Centauridium* TORR. et GR. *Fl. N.-Amer.* ii. 246: fruit not or scarcely compressed; pappus hairs ∞, longer than fruit, very unequal; some paleaceous; involucre subglobular or broadly campanulate; stem herbaceous, annual or biennial; leaves alternate, linear-lanceolate, entire. (*Texas.*)

? *Lessingia* CHAM. *Linnæa*, iv. 203, t. 2, fig. 2.—DC. *Prodr.* v. 351.—ENDL. *Gen.* n. 2383.—B. H. *Gen.* ii. 257, 1232, n. 94.—A. GRAY, *Proc. Amer. Acad.* vii. 351; viii. 637: discal flowers female often large; corolla (normal ?) subequal or oblique, 5-fid, yellow, "white ? or purplish;" fruit obconical scarcely compressed; pappus hairs ∞, very unequal; stem herbaceous; leaves alternate, dentate, entire or sometimes pinnatifid. (*West. N. America.*)

Chrysothamnus NUTT. *Trans. Amer. Phil. Soc.* ser. 2, vii. 323.—B. H. *Gen.* ii. 255, n. 89.—*Bigelowia* DC. *Mém. Comp.* t. 5; *Prodr.* v. 329. ENDL. *Gen.* n. 2375.—*Linosyris* TORR. et GR. *Fl. N.-Amer.* ii. 232 (not CASS.): flowers 1-morphous or radial few ligulate; or limb of corolla not large or narrow campanulate, 5-fid; fruit narrow subcompressed; pappus hairs ∞, thin unequal, sub-2-seriate; involucre rather broad campanulate, or oblong; bracts ∞-seriate; stem herbaceous or shrubby; leaves alternate, linear or lanceolate, sometimes dentate or pinnatifid. (*N. and andine S. America.*)

[1] Spec. 135. DUN. *Mém. Mus* v. t. 5-7 (*Grindelia*).—BERTOL. *Misc.* vi. t. 2 (*Linosyris*); vii. t. 1-4 (*Chrysopsis*).—CAV. *Icon.* t. 168 (*Aster*).—A. GRAY. *Proc. Amer. Acad.* v. 121 (*Haplopappus*); vi. 541 (*Haplopappus, Chrysothamnus*), 542 (*Chrysopsis*); vii. 353 (*Haplopappus*), 354 (*Chrysothamnus*); viii. 290 (*Chrysothamnus*); *Proc. Acad. Philad.* (1863), 66 (*Haplopappus, Chrysothamnus*); *Emor. Exp. Bot.* 79 (*Chrysothamnus*); *Parry Rock. Mount. Pl.* 10 (*Haplopappus*); *Sitgr. Exp. Bot.* t. 4 (*Chrysothamnus*); *Amer. expl. Exp. Bot.* ii. t. 7 (*Lessingia*).—TORR. *Fl. N.-York*, t. 56 (*Chrysopsis*); *Whipple Exp. Bot.* t. 12 (*Chrysothamnus*).—HOOK. *Icon.* t. 1101 (*Pentachæta*).—EAT. *Unit. St. Fort. parall. Rep. Bot.* 159 (*Haplopappus*).—WEDD. *Chlor. andin.* i. t. 38 (*Haplopappus*).—PHIL. *Fl. atacam.* 30; *Linnæa* xxviii. 724; xxx. 192; xxxiii. 139 (*Haplopappus*).—*Bot. Reg.* t. 787 (*Doria*), 248, 781 (*Grindelia*).—*Bot. Mag.* t. 1706 (*Doria*), 3737, 4628 (*Grindelia*).—WALP. *Rep.* ii. 585 (*Grindelia*), 586 (*Heterotheca*), 587 (*Neja*), 588 (*Chrysopsis*), 589 (*Chrysothamnus*), 592 (*Haplopappus*), 958 (*Grindelia*), 959 (*Chrysopsis*); v. 193 (*Haplopappus, Linosyris*); vi. 127 (*Centauridium, Heterotheca*), 128 (*Bradburia, Chrysopsis*), 130 (*Haplopappus*), 131 (*Pentachæta*); *Ann.* i. 408 (*Haplopappus*); ii. 829 (*Chrysopsis*), 830 (*Haplopappus*), 833 (*Lessingia*); v. 191 (*Grindelia*), 193 (*Haplopappus, Linosyris*).

[2] *Linnæa*, xxxiii. 141.—B. H. *Gen.* ii. 231, n. 82.

[3] "Yellow."

[4] "Scarcely surmounting the involucre and easily overlooked."

hermaphrodite fertile; corolla tubular, 5-dentate, narrowed at base. Style branches rather long, acute, pubescent from the middle. Fruit rather teretely sericeous; pappus hairs scabrous, 1-seriate.—An erect undershrub corymbose-branched glabrous; leaves alternate, linear, remotely serrate-dentate, acuminate rather sharp pointed at apex; capitules solitary, long pedunculate; receptacle alveolate fringed; involucral bracts loosely subimbricate, ∞-seriate. (*Chili.*[1])

152? **Remya** HILLEBR.[2]—Flowers[3] 2-morphous; the radial female fertile, 1-seriate; corolla slightly ligulate, sub-2-labiate; anterior blade entire or 2–3-dentate, erect or open; posterior lip dentiform or evolute; the discal hermaphrodite, sterile or fertile; limb of regular corolla campanulate; lobes 5, recurved. Style branches of hermaphrodite flowers flattened, lanceolately appendiculate. Radial fruit acute, 3-quetrous;[4] the discal terete costate, oftener vacuous; pappus hairs 3–8, rather stiff, persistent, fewer in radial.—A tree (?) or shrub; leaves alternate, lanceolate, dentate, hoary beneath; capitules (small) subcorymbose; receptacle flat bare; bracts of ovoid involucre subcoriaceous appressed, ∞-seriate.[5] (*Sandwich Islands.*)

153. **Xanthocephalum** W.[6]—Flowers[7] generally all fertile, 2-morphous; the radial female sub-1-seriate; corolla ligulate (large or small) oftener entire; the discal regular, hermaphrodite, sometimes sterile; limb of tubular corolla but little expanded, 5-fid, valvate. Style branches of hermaphrodite flowers lanceolately or 3-angularly appendiculate. Fruit oblong, sometimes rather compressed, smooth or obtusely 5–∞-striated; pappus long paleaceous or shortly or very shortly coroniform, sometimes 0.—Herbs or undershrubs erect branched; leaves alternate, narrow, entire or dentate; sometimes glutinous or punctate; capitules solitary or in close corymbiform or loose cymes; receptacle flat or convex, oftener foveolate; involucre ovoid, campanulate or broadly hemispherical; bracts ∞, few- ∞-seriate, unequal, some-

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[1] Spec. i. *S. corymbosa* PHIL.

[2] Herb. ex B. H. *Gen.* ii. 536, n. 78 a.

[3] "Yellow?"

[4] Angles sometimes ciliately scabrous.

[5] "A genus somewhat approaching *Grindelia*, but clearly distinct by its habit, narrow capitules and sub-2-labiate corollas of the ray" (ex B. H., from whom the characters are here extracted).

[6] *Berl. Mag. nat. Cur.* (1807), 140.—LESS. *Syn.* 252.—DC. *Prodr.* vi. 43.—ENDL. *Gen.* n. 2662.—B. H. *Gen.* ii. 249, n. 77.—*Xanthocoma* H. B. K. *Nov. gen. et. spec.* iv. 310, t. 412.—*Grindeliopsis* SCH. BIP. *Bonplandia* (1858), 356.—*Gunthera* RGL, in *Gartenflora* (1858) 44.

[7] Yellow.

times squamose or coriaceous at apex.[1] (*Extra trop. N. and S. America.*[2])

154. **Inula** L.[3]—Flowers[4] fertile 2-morphous; the radial female, 1–∞-seriate; corolla ligulate, 2–4-dentate, open, reflexed or more rarely short erect, obliquely few-dentate; the discal hermaphrodite; limb of corolla but slightly expanded, 5-fid or 5-dentate, valvate. Anthers sagittate at base and long caudate; appendages entire, ciliate or branching. Style girt at base by disk; branches in female flower linear; in hermaphrodite broader, compressed or flattened, obtuse at apex and very shortly papillose. Fruit subterete; ribs 4, 5, sometimes scarcely perceptible; more rarely a few intermediate added; pappus hairs ∞, sometimes few, 1–∞-seriate, equal or unequal, smooth, ciliate or barbellate.—Annual or oftener perennial herbs, sometimes shrubby, scabrous or glandular pubescent or with longer covering; leaves alternate, oftener crowded, sometimes basal; capitules[5] terminal, solitary or corymbiform cymose; cymes sometimes compound racemose; involucre ovoid or hemispherical or broadly campanulate; receptacle flat or slightly convex, bare, foveolate or fringed; bracts imbricate, ∞-seriate, narrow, broadly foliaceous or herbaceous-appendiculate; sometimes dry subcoriaceous appressed and glutinous at margin.[6] (*Europe, Asia, and extra trop. and south. Africa.*[7])

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[1] Sections of the genus are:

Gutticrezia Lag. *Elench. H. matrit.* 30 (1816).—Endl. *Gen.* n. 2586.—B. H. *Gen.* ii. 250, n. 78.—*Brachyris* Nutt. *Gen. amer.* ii. 163.—Endl. *Gen.* n. 2361.—*Brachyachyris* Spreng. *Syst.* iii. 574.—*Odontocarpha* DC. *Prodr.* v. 71.—*Hemiachyris* DC. *loc. cit.* 313.—*Amphiachyris* DC. *Pl. rar. Jard. Genèv.* i. t. i.—*Amphipappus* Torr. et Gr. *Bost. Journ. N. Hist.* v. 4; *Smiths. Contrib.* vi. 16, t. 9: flowers ligulate few; fruit ∞-costate or striate; pappus hairs rather long paleaceous or reduced to a short crown, sometimes 0; involucre broadly campanulate or ovoid; bracts few-seriate. (*N. and S America.*)

Gymnosperma Less. *Syn.* (1832), 194.—DC. *Prodr.* v. 311.—Endl. *Gen.* n. 2360.—B. H. *Gen.* ii. 249, n. 76.—*Selloa* Spreng. ex DC. (not H. B. K.): fruit epappose, 4–5-costate; bracts of ovoid involucre few-seriate; capitule few-flowered; leaves narrow spotted. (*Mexico.*)

[2] Spec. about 30, Torr. et Gr. *Fl. N.-Amer.* ii. 192 (*Brachyris*).—Remy, *C. Gay, Fl. chil.* iv. 33 (*Brachyris*).—Phil. *Linnæa*, xxxiii. 137 (*Brachyris*).—A. Gray, *Pl. Wright.* i. 91; ii. 79 (*Guttierezia*).—*Bot. Reg.* t. 462 (*Selloa*).—Walp. *Rep.* ii. 585 (*Brachyris*), 989; *Ann.* i. 407 (*Hemiachyris, Amphipappus*); ii. 828 (*Brachyris*), 875; v. 191 (*Gymnosperma, Amphipappus*), 234 (*Gutierrezia*).

[3] *Gen.* n. 956.—J. *Gen.* 181.—Gærtn. *Fruct.* ii. 449.—DC. *Prodr.* v. 463; vii. 283.—Less. *Syn.* 198.—Spach. *Suit. à Buffon*, x. 220.—Endl. *Gen.* n. 2426.—B. H. *Gen.* ii. 330, n. 275.—*Helènium* Adans. *Fam. des pl.* ii. 125.—*Limbarda* Adans, *loc. cit.*—*Eritheis* S.-F. Gray, *Arr. brit. pl.* ii. 464.—? *Enula* Neck. *Elem.* i. 4.—*Corvisartia* Mér. *Fl. par.* 328; éd. 2, 261, t. 2.—*Schizogyne* Cass. *Dict. sc. nat.* lvi. 23.—*Duhaldea* DC. *Prodr.* v. 366.—*Inulaster* Sch. Bip. *A. Rich. Fl. abyss.* i. 399.—*Cupularia* Gren. et Godr. *Fl. de Fr.* ii. 180.—Muss. *Compt. rend. Assoc. franc.* vii. 672, t. 13.

[4] Yellow or the radial sometimes white.

[5] Large or rather small.

[6] Perhaps an anomalous sect. of the genus is *Homochæte* Benth. (*Hook. Icon.* t. 1110; *Gen.* ii. 331, n. 276), of which the involucre is ovoid-cylindrical; bracts coriaceous appressed, ∞-seriate, fruit 8–10-costate; pappus hairs stiff, 1-seriate: stem shrubby densely leaved; capitules terminal sessile. (*South Africa.*)

[7] Spec. 50–55. Jacq. *Fl. austr.* t. 134, 162,

155? **Pulicaria** GÆRTN.[1]—Flowers[2] (nearly of *Inula*) 1–2-morphous; the radial 1–2-seriate; pappus hairs various; the inner elongate few or ∞; the outer connate at base, shortly setose or oftener paleaceous, rarely 0. Fruit not or 4–∞-costate.—Herbs, undershrubs or shrubs; leaves alternate, entire or dentate, glabrous or variously clothed; capitules, &c., of *Inula*;[3] but involucral bracts

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233, 358; App. t. 19; *Hort. vindob.* iii. t. 51.—SIBTH. *Fl. græc.* t. 864, 865 (*Conyza*), 866 (*Erigeron*), 873, 875.—DESF. *Ann. Mus.* xi. t. 23.—TEN. *Fl. nap.* t. 76 (*Conyza*).—DC. *Prodr.* v. 343, n. 1–3 (*Amphirhapis*).—WEBB. *Phyt. Canar.* t. 83 (*Schizogyne*).—BROTER. *Phyt. lusit.* t. 64.—REICHB. *Ic. Fl. germ.* t. 922–931; *Iconogr.* t. 346, 347.—MIQ. *Fl. ind.-bat.* ii. 62; *Ann. Mus. lugd.-bat.* ii. 171.—BOISS. *Diagn. or.* ser. 2, iii. 11; *Fl. or.* iii. 184.—A. GRAY, *Man.* (1856), 208.—FR. et SAV. *Enum. pl. jap.* i. 230.—HARV. and SOND. *Fl. cap.* iii. 121.—OLIV. and HIERN. *Fl. trop. Afr.* iii. 357.—EDGEW. *Trans. Linn. Soc.* xx. 68 (*Leucactis*).—WILLK. et LGE, *Prodr. Fl. hisp.* ii. 42.—GREN. et GODR. *Fl. de Fr.* ii. 173 (*Corrisartia*), 174.—*Bot. Reg.* t. 334. *Bot. Mag.* t. 1907.—WALP. *Rep.* ii. 600; vi. 140; 721; *Ann.* ii. 842; v. 201.

[1] *Fruct.* ii. 461, t. 173.—CASS. *Dict.* xxiii. 565.—DC. *Prodr.* v. 478; vii. 285.—ENDL. *Gen.* n. 2434.—B. H. *Gen.* ii. 335, n. 289.—*Francœuria* CASS. *Dict.* xxxviii. 374.—ENDL. *Gen.* n. 2431.—*Duchesnia* CASS. *Bull. Soc. philom.* (1817); *Dict.* xiii. 545 (not SM.).—*Tubilium* CASS. *Bull. Soc. philom.* (1817), 153; *Dict.* lvi. 19.—? *Poloa* DC. *Guillem. Arch. bot.* ii. 514.—*Strabonia* DC. *Prodr.* v. 481.—*Pterochæta* BOISS. *Diagn. or.* vi. 76.—*Platychæta* BOISS. *Diagn. or.* xi. 5; ser. 2, iii. 10.

[2] Yellow.

[3] Of which perhaps rather a sect. scarcely differing except in pappus. We make sections:

Jasonia CASS. *Dict.* xxiv. 200.—DC. *Prodr.* v. 476 (part.).—ENDL. *Gen.* n. 2433.—B. H. *Gen.* ii. 332, n. 289.—*Orsinia* BERTOL. *Ann. St. nar. Bologn.* (1829), ii. 362; *Fl. ital.* ix. 99.—*Myriadenus* CASS. *Bull. Soc. philom.* (1817); *Dict.* xxiii. 565.—*Chiliadenus* CASS. *Dict.* xxxiv. 34: flowers 1–2-morphous; fruit ∞-costate; inner pappus hairs long; outer short subpaleaceous free; involucral bracts ∞-seriate dry, subherbaceous at apex, squarrose. (*Medit. reg.*)

Allagopappus CASS. *Dict.* lvi. 21.—B. H. *Gen.* ii. 333, n. 284: flowers 1-morphous; ribs of fruit scarcely perceptible; inner pappus hairs few (5, 6) scabrous; outer paleaceous very short subconnate, more or less lacerate; involucral bracts ∞, narrow, appressed, ∞-seriate. (*Canary*.

Vieræa WEBB, *Phyt. canar.* ii. 225, t. 84.—B. H. *Gen.* ii. 334, n. 285: flowers 2-morphous; fruit 5-costate; inner pappus hairs few (5–10) long, barbellate or scabrous; outer paleaceous short few; involucral bracts few-seriate, scarious at margin; stem shrubby; leaves rather broad glaucescent. (*Canary Isles.*)

Grantia BOISS. *Diagn. or.* vi. 79; *Fl. or.* iii. 213.—B. H. *Gen.* ii. 332, n. 280.—*Perralderia* COSS. *Bull. Soc. bot. Fr.* vi. 394; *Ann. sc. nat.* sér. 4, xviii. 209, t. 12: flowers 1–2-morphous; fruit 10-costate; inner pappus hairs longer subequal; outer shorter, narrow or subpaleaceous free; stem herbaceous; involucral bracts unequal few-seriate; outer herbaceous. (*Levant, North Africa.*)

Pegolettia CASS. *Dict.* xxxviii. 230.—DC. *Prodr.* v. 481.—ENDL. *Gen.* n. 2436.—B. H. *Gen.* ii. 334, n. 286: flowers 1-morphous or sub-2-morphous (some corollas hence deeply divided); fruit 10-costate; pappus hairs very thin; outer or intermixed with pales few lacerate; stem herbaceous; bracts of broad involucre few-seriate; outer broader subherbaceous. (*South. and east. trop. Africa.*)

Iphiona CASS. *Dict.* xxiii. 609.—DC. *Prodr.* v. 475.—ENDL. *Gen.* n. 2432.—B. H. *Gen.* ii. 333, n. 283.—*Vartheimia* DC. *Prodr.* v. 473.—ENDL. *Gen.* n. 2428.—*Carphopappus* SCH. BIP. *Walp. Rep.* ii. 954: flowers 1-morphous; fruit 6–10-costate; pappus hairs ∞, 2–∞-seriate; outer thin shorter; stem somewhat shrubby; bracts of campanulate or subovoid involucre dry or scarious, ∞-seriate. (*Levant, north. centr. south. trop. and east. ins. Africa.*)

Printzia CASS. *Dict.* xxxvii.; 463; xliii. 324.—DC. *Prodr.* vii. 13.—ENDL. *Gen.* n. 2931.—B. H. *Gen.* ii. 333, 1233, n. 282.—? *Lloydia* NECK. *Elem.* i. 4: flowers 2-morphous; fruit 4–5-costate; pappus hairs scabrous, barbellate or sometimes plumose; outer short narrow; bracts of subcampanulate involucre erect rather stiff, ∞-seriate; stem shrubby. (*South. Africa.*)

Pentanema CASS. *Bull. Soc. philom.* (1818), 75; *Dict.* xxviii. 373.—DC. *Prodr.* v. 474.—ENDL. *Gen.* n. 2430.—*Vicoa* CASS. *Ann. sc. nat.* sér. 1, xvii. 418; *Dict.* lx. 549.—DC. *Prodr.* v. 474.

few-seriate; the outermost short or foliaceous; the inmost sometimes scarious. (*Europe, Asia, and warm and temp. Africa.*[1])

156. **Porphyrostemma** Grant.[2]—Flowers nearly of *Inula*, 2-morphous; "ligules"[3] small, ∞-seriate. Fruit small (rather terete?) or 5-costate; outer pappus hairs very short paleaceous free; inner few (5, 6) very thin.—An erect branching hirsute herb; leaves alternate narrow, entire or glandulary denticulate; capitules in loose corymbiform cymes; bracts of broadly hemispherical involucre imbricate narrow, ∞-seriate.[4] (*Trop. Africa.*[5])

157. **Codonocephalum** Fenzl.[6]—Flowers[7] (nearly of *Inula*) 1-morphous; corolla regular, 5-dentate. Anthers auriculate at base; appendages long ∞-setose. Fruit subterete, 4–5-angled, ∞-striate; pappus hairs ∞, barbellate or shortly plumose; the outer few shorter; 1-seriate.—A perennial scabrous herb; leaves alternate, oftener entire reticulate; capitules terminal or in axil of bracts, hence spuriously spicate; receptacle flat bare; bracts of obconical involucre ∞, unequal, ∞-seriate; the outer few foliaceous. (*Kurdistan.*[8])

158. **Bojeria** DC.[9]—Flowers[10] (nearly of *Inula*) 1-morphous; corolla equal tubular; limb slightly expanded, 5-lobed. Anthers

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—Less. *Syn.* 199.—Endl. *Gen.* n. 2429.—B. H. *Gen.* ii. 334, n. 287.—*Killiana* Sch. bip. *hb. berol.* (ex B. H.): flowers 1-2-morphous; fruit scarcely costate; pappus hairs very thin, sub-1-seriate, or few very shortly paleaceous; involucral bracts narrow, ∞-seriate. (*Trop. Asia and Africa.*)

? *Calostephane* Benth. *Hook. Icon.* t. 1111; *Gen.* ii. 335, n. 288: flowers 2-morphous; fruit 10-costate; pappus pales to 10; inner setose barbellate; outer alternate paleaceous transparent denticulate; involucral bracts narrow, sub-2-seriate; stem herbaceous; leaves decurrent subdentate. (*East. trop. Africa.*)

[1] Spec. about 60. Jacq. *Ic. rar.* t 171 (*Chrysocoma*).—Sibth. *Fl. græc.* t. 874 (*Inula*).—Del. *Fl. eg.* t. 46 (*Inula*).—Jaub. et Sp. *Ill. pl. or.* iv. t. 341 (*Pegolettia*), 342–345 (*Strabonia*), 346–349; 350, 351 (*Pentanema*).—Field, *Sert. pl.* t. 68 (*Pentanema*).—Boiss. *Diagn. or.* ser. 2, iii. 15; *Fl. or.* iii. 201, 206 (*Francœuria*), 209 (*Pegolettia*), 210 (*Iphiona*), 211 (*Varthemia*).—Harv. and Sond. *Fl. cap.* iii. 121, 122 (*Pegolettia*, part.), 513 (*Printzia*).—Harv. *Thes. cap.* t. 158 (*Printzia*).—Webb, *Phyt. canar.* t. 85 (*Allagopappus*).—Wight, *Icon.* t. 1148 (*Vicoa*).—Oliv. and Hiern, *Fl. trop. Afr.* iii. 359 (*Iphiona*), 360 (*Pegolettia*), 361 (*Vicoa*), 362 (*Calostephane*), 363 —Reichb. *Ic. Fl. germ.* t. 932, fig. 2, 933, 934, fig. 1.—Gren. et Godr. *Fl. de Fr.* ii. 178.—Walp. *Rep.* vi. 143 (*Iphiona*), 144 (*Grantia*); *Ann.* ii. 843; 844 (*Pegolettia*); v. 203.

[2] Ex Oliv. *Trans. Linn. Soc.* xxix. 96, t. 63.—B. H. *Gen.* ii. 336, n. 290.

[3] Purple.

[4] "A genus with few male corollas ∞-seriate and purple, remarkable in the *Euinuleæ* and in some respects allied to *Erigeron.*" (B. H.)

[5] Spec. 1. *P. Grantii* Benth. ex Oliv. and Hiern, *Fl. trop. Afr.* iii. 367.

[6] *Flora* (1843), 397.—B. H. *Gen.* ii. 330, n. 274.—*Sprunnera* Sch. bip. (part.), in *exs. Kotsch. assyr.* n. 576; *Walp. Rep.* ii. 954.

[7] Yellow.

[8] Spec. 1. *C. inuloides* Fenzl.—*Sprunnera inuloides* Sch. bip.

[9] *Prodr.* v. 94; *Mém. Comp.* t. 3.—Endl. *Gen.* n. 2241.—B. H. *Gen.* ii. 331, n. 277.

[10] Yellow (or purple?).

sagittate at base with branched setose appendages. Style branches exserted complanate recurved, obtuse at apex. Fruit subterete, thinly ∞-costate and sulcate; pappus hairs ∞, thin rather scabrous; the outer few shorter or 0.—Perennial herbs, puberulous or villose; leaves alternate, elongate entire; the upper amplexicaul at cordate base; capitules[1] terminal pedunculate, solitary or loosely cymose; bracts of broadly hemispherical involucre rather stiff acute few-seriate; the inner subscarious; the outer herbaceous; receptacle flat or slightly concave foveolate and thinly ciliately fringed. (*Madagascar, south. Africa.*[2])

159? **Cypselodontia** DC.[3]—Flowers[4] 2-morphous; the radial neuter, 1-seriate; corolla ligulate; the discal hermaphrodite fertile; corolla regular. Anthers barbately caudate at auriculate base. Style branches of hermaphrodite flowers, obtuse at apex. Radial fruit glabrous effete, girt at base by a ring of hairs; pappus hairs few; discal fruit highly villose; pappus hairs numerous, ∞-seriate.—A branched undershrub; branches straight nearly leafless; leaves alternate obovately oblong entire, glabrous above, hoary villose beneath, 1-nerved; capitules solitary; receptacle alveolate; alveoles dentately fringed at margin; involucral bracts ∞, linear, ∞-seriate; the outer squamose. (*South Africa.*[5])

160? **Minurothamnus** DC.[6]—Flowers[7] 2-morphous; the radial female, 1-seriate; corolla ligulate; the discal hermaphrodite fertile. Anthers shortly 2-caudate at base. Style branches patulous. Fruit very villose; pappus hairs 20, 2-seriate, straight (yellow); the inner stiffer; the outer 10, a little shorter.—An undershrub; branches[8] bare at apex; leaves alternate linear entire, glabrous above, appressed-tomentose beneath; capitules solitary; receptacle . . . ?; involucral bracts 2-seriate; the inner longer obtuse, submembranous at margin; the outer acuminate shorter. (*S. Africa.*[9])

161. **Carpesium** L.[10]—Flowers[11] sub-2-morphous; the radial

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[1] Rather large.

[2] Spec. 2, 3. THUNB. *Fl. cap.* 628 (*Eupatorium*).—LESS. *Syn.* 200 (*Pegolettia*).—DC. *Prodr.* v. 481, n. 4 (*Pegolettia*).—HARV. and SOND. *Fl. cap.* iii. 123, n. 4 (*Pegolettia*).

[3] *Prodr.* vii. 286.—ENDL. *Gen.* n. 2436^{2}.—B. H. *Gen.* ii. 332, n. 279.

[4] Yellow.

[5] Spec. 1. *C. Eckloniana* DC.—HARV. and SOND. *Fl. cap.* iii. 123.

[6] *Prodr.* vii. 286.—ENDL. *Gen.* n. 2436^{1}.—B. H. *Gen.* ii. 331, n. 278.

[7] Yellow.

[8] "Terete, reddish tomentose."

[9] Spec. 1. *M. phagnaloides* DC.—HARV. and SOND. *Fl. cap.* iii. 124.

[10] *Gen.* n. 948.—DC. *Prodr.* vi. 281.—ENDL. *Gen.* n. 2775.—B. H. *Gen.* ii. 336, 1233, n. 292.

[11] Yellow.

female, ∞-seriate; corollas thinly tubular, 3–5-dentate; the discal hermaphrodite fertile; corollas a little more regular and broader, 5-dentate. Anthers rather setaceous-branched at auriculate base. Style branches of hermaphrodite flowers linear slightly compressed and obtuse, connivent or finally open. Fruit elongate, thinly costate, shortly rostrate and crowned with a cartilaginous ring, without pappus.—Erect herbs, glabrous or oftener puberulous; leaves alternate, membranous entire or dentate; capitules (often drooping) terminal or sessile in axils or terminal at the top of an axillar twig; involucral bracts few-seriate; the outer sometimes foliaceous; receptacle flat bare or very shortly foveolate.[1] (*South. Europe, subtrop. and temp. Asia.*[2])

162 ? **Amblyocarpum** Fisch and Mey.[3]—Flowers[4] 2-morphous; the radial female, 1–2-seriate; corolla narrowly ligulate, 2–3-dentate and a little longer than the disk; the discal regular hermaphrodite fertile; corolla campanulate, 5-fid; tube short. Anthers thinly caudately appendiculate at auriculate base. Style branches of hermaphrodite flowers short flattened obtuse. Fruit highly 4–5-costate, glabrous, crowned with a cartilaginous ring without pappus.—A rather glabrous branched herb, annual or biennial; leaves alternate entire membranous; capitules[5] terminal solitary or few; receptacle slightly convex bare; bracts of hemispherical or broadly campanulate involucre few-seriate dry or herbaceous at apex; the outer longer foliaceous. (*Caspian reg.*[6])

163. **Buphthalmum** T.[7]—Flowers[8] 2-morphous; the radial 1–2-seriate; corolla ligulate, 2–4-dentate; the discal hermaphrodite fertile; limb of regular tubular corolla more or less expanded. Anthers longer or shorter acutately or acuminately caudate at sagittate base. Style branches of hermaphrodite flowers flattened, obtuse or rounded. Fruit 3-quetrous, 3-alate, sometimes 3-horned at apex or variously 3–∞-costate; pappus pales oftener short

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[1] A genus allied in some points to *Inula*, in others to *Placea*.

[2] Spec. about 5, Jacq. *Fragm.* t. 134.—Deless. *Ic. sel.* iv. t. 1 (*Oiospermum*).—Wight, *Icon.* t. 1120.—Reichb. *Ic. Fl. germ.* t. 983.—Miq. *Ann. Mus. lugd.-bat.* ii. 179.—Fr. et. Sav. *Enum. pl. jap.* i. 243.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 67.—Walp. *Ann.* i. 989.

[3] *Ind. sem. Hort. petropolit.* iii. 30.—DC. *Prodr.* vii. 286.—Endl. *Gen.* n. 2776.—B. H. *Gen.* ii. 336, n. 291.

[4] "Yellow."

[5] "Rather small."

[6] Spec. 1, unknown to us. *A. inuloides* Fisch. et Mey.

[7] *Inst.* 495, t. 282.—L. *Gen.* n. 977 (part.).—DC. *Prodr.* v. 483.—Less. *Syn.* 209.—Spach, *Suit. à Buffon*, x. 224.—Endl. *Gen.* n. 2439.—B. H. *Gen.* ii. 338, n. 298.—*Telekia* Baumg. *F transsylv.* iii. 149.—DC. *Prodr.* v. 485.—Endl. *Gen.* n. 2440.—*Molpadia* Cass. *Bull. Soc. philom.* (1819), 166; *Dict. sc. nat.* xxxii. 400.

[8] Yellow.

truncate or partly aristate, free or connate at base in a crown or cupule.—Herbs, sometimes shrubby, glabrous, scabrous or villose; leaves alternate, narrow or rather broad, entire or dentate; capitules pedunculate generally solitary; bracts of hemispherical involucre few-seriate; the outer often herbaceous; receptacle loaded with pales generally enfolding the flowers.[1] (*Warm. and temp. Europe, Asia and Africa.*[2])

164. **Nablonium** Cass.[3]—Flowers[4] hermaphrodite fertile, 1-morphous; limb of regular corolla campanulate, 5-fid. Anthers

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[1] Sections of the genus are:

Callilepis DC. *Prodr.* v. 671.—Endl. *Gen.* n. 2615.—B. H. *Gen.* ii. 339, n. 299: pappus pales ∞, truncate or lacerate, 2, 3 at angles longer, aristate or acute; leaves glabrous or villose. (*S. Africa.*)

Odontospermum Neck. *Elem.* i. 20.—B. H. *Gen.* ii. 340, n. 302.—*Asteriscus* Mœnch, *Meth.* 592.—DC. *Prodr.* v. 486; vii. 287.—Endl. *Gen.* n. 2441.—*Naupilus* Cass. *Dict.* xxxiv. 272: fruit 3-quetrous or (in the same capitule) ∞-costate; pappus hairs ∞, free paleaceous, slightly unequal, lacerately denticulate; stem herbaceous or subshrubby; leaves oftener sericeous; capitules shortly or not pedunculate. (*Medit. reg. north. west. ins. Africa.*)

Athalmus Neck. *Elem.* i. 20.—*Pallenis* Cass. *Dict.* xxxvii. 275.—DC. *Prodr.* v. 487.—Endl. *Gen.* n. 2442.—B. H. *Gen.* ii. 349, n. 303.—*Asteriscus* Sch. bip. *Webb Phyt. canar.* ii. 229 (not Mœnch): radial fruit laterally 2-alate, epappous; discal not or narrowly alate; pappus pales ∞, very short lacerate, hence sometimes wanting; stem herbaceous annual sericeous-villose; leaves entire; outer involucral bracts foliaceous, sometimes pungent. (*Medit. reg.*)

Chrysophthalmum Sch. bip. *Walp. Rep.* ii. 955.—B. H. *Gen.* ii. 341, n. 304: fruit subterete, 5-costate; pappus pales ∞, narrow very short; stem herbaceous; leaves entire, pubescent or sublanate; capitules solitary or very few; outer involucral bracts herbaceous, generally foliaceous. (*The East.*)

Osmitopsis Cass. *Bull. Soc. philom.* (1817); *Dict.* xxxvii. 5.—DC. *Prodr.* vi. 292.—Endl. *Gen.* n. 2785.—B. H. *Gen.* ii. 341, n. 306: flowers 2-morphous; the radial neutral without style; style branches of hermaphrodite flowers truncate at apex; fruit fertile oblong sub-4-5-angled; pappus subnil or 0; stem shrubby; leaves (odorous) glandulosely pubescent; bracts of rather broad involucre few-seriate; outer generally herbaceous. (*S. Africa.*)

Osmites L. *Gen.* n. 983.—Lamk, *Ill.* t. 704.—Cass. *Dict.* xxxvii. 5.—DC. *Prodr.* vi. 290.—Endl. *Gen.* n. 2784.—B. H. *Gen.* ii. 341, n. 305.—*Bellidiastrum* Vaill. *Act. Acad. par.* (1720), 316 (not Mich.).—*Spanotrichum* E. Mey. exs. *Dreg.*; charact. of *Osmitopsis:* radial flowers female; pales of short pappus entire or lacerate, sometimes elongately aristate; stem subshrubby; leaves (odorous) narrow sometimes dentate or pinnatifid. (*S. Africa.*)

Anisopappus Hook. and Arn. *Beech. Voy. Bot.* 196.—Endl. *Gen.* n. 3032[1].—B. H. *Gen.* ii. 339, n. 301: fruit subterete or partly rather compressed, ∞-costate, sometimes rather pilose to ribs; pappus pales free short; inner 2-5, aristate longer thin unequal; stem herbaceous annual; leaves alternate dentate scabrous; capitules few loosely corymbiform-cymose. (*China, trop. Africa.*)

? *Sphacophyllum* Benth. *Hook. Icon.* t. 1135; *Gen.* ii. 339, n. 300: fruit narrow, callose, 5-costate, rather pilose to ribs; pales of very short pappus connate in a crown; stem subshrubby; leaves alternate rugulose; capitules (small) pedunculate few or solitary, terminal or axillar. (*Madagascar.*)

[2] Spec. about 20. Jacq. *Fl. austr.* t. 370.—Vahl, *Symb.* i. t. 19.—Sibth. *Fl. græc.* t. 898, 899.—W. et Kit. *Pl. rar. hung.* t. 113.—DC. *Prodr.* v. 618, n. 40 (*Verbesina*); vi. 3, n. 1 (*Epallage*); vii. 287, n. 4 (*Ceruana*).—Webb, *Phyt. canar.* t. 86, 87 (*Naupilus*).—Reichb. *Ic. Fl. germ.* t. 936, 937; 938 (*Telekia*); 939 (*Asteriscus, Pallenis*); *Icon. bot.* t. 350 (*Telekia*).—Harv. and Sond. *Fl. cap.* iii. 136 (*Callilepis*), 304 (*Osmites*), 305 (*Osmitopsis*).—Benth. *Fl. hongkong.* 180 (*Anisopappus*).—Boiss. *Fl. or.* iii. 178 (*Telekia, Asteriscus*), 180 (*Pallenis*), 181 (*Chrysophthalmum*).—Willk. et Lge, *Prodr. Fl. hisp.* ii. 47.—Gren. et Godr. *Fl. de Fr.* ii. 170; 171 (*Asteriscus*).—*Bot. Mag.* t. 899; 3466 (*Telekia*).—Walp. *Ann.* ii. 844 (*Asteriscus*), 846 (*Pallenis*); v. 208.

[3] *Dict. sc. nat.* xxxiv. 101.—Less. *Syn.* 259.—DC. *Prodr.* vi. 37.—Endl. *Gen.* n. 2652.—B. H. *Gen.* ii. 341, n. 307.

[4] Yellow.

long setaceous caudate at base. Style branches thin, truncate at subcapitate apex. Fruit rather obpyramidately compressed glabrous, cuneate at base, laterally 2-aristate above; aristæ conical rigid.—A dwarf herb; stem cæspitose or simple, sometimes stoloniferous; leaves basal narrow entire, glabrous or puberulous; capitule terminal at top of scape, sometimes 1-leaved or 1-bracteate; involucral bracts few, membranous or translucent, few-seriate; receptacle raised, paleaceous or nearly bare between the flowers.[1] (*Tasmania.*[2])

165. **Anvillea** DC.[3]—Flowers[4] fertile, 2-morphous; the radial (sometimes 0) female, 1-seriate; corolla ligulate open, 2–3-dentate; the discal hermaphrodite; limb of regular corolla slightly expanded, 5-fid. Anthers with thin caudate appendage at base. Style branches of hermaphrodite flowers linear, flattened, obtuse or subulate. Fruit subterete pilose, subangular, ∞-costate, without pappus.—Rigid or subshrubby branched herbs, glabrous or hoary tomentose; leaves alternate, angulate or incised; capitules solitary terminal; receptacle slightly convex or concave, paleaceous between the flowers;. bracts of subglobular or hemispherical involucre ∞, imbricate, sometimes connate at base,[5] ∞-seriate; the inner membranous lanceolate; the outer with foliaceous or spinescent appendage. (*North. Africa, Levant.*[6])

166? **Gymnarrhena** Desf.[7]—Flowers[8] 2-morphous; the radial female fertile, ∞-seriate; corolla tubular thin, shortly dentate; the discal hermaphrodite sterile; limb of tubular corolla campanulate, 5-fid; base of corolla generally dilated, more or less persistent. Anthers entire at obtuse base. Style branches of hermaphrodite flowers obtuse, free or more or less coalescent.[9] Radial fruit obconical, densely villose; pappus 2-plex; pales of interior 8–10, narrow acute; hairs of exterior ∞, scabrous subfasciculate. Discal fruit abortive; pappus hairs few (8–12) barbellately subplumose, more or less paleiform, connate at base,

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[1] An anomalous genus fully congruous with no series of the *Compositæ*. Habit of the lower *Calycereæ*.

[2] Spec. 1. *N. calyceroides* Cass.—Hook. f. *Fl. tasm.* i. 190, t. 48 A.—Benth. *Fl. austral.* iii. 545.

[3] *Prodr.* v. 487.—Endl. *Gen.* n. 2443.—B. H. *Gen.* ii. 338, 1234, n. 296.—*Sycodium* Pom. *N. mat. Fl. atl.* 34.

[4] Yellow or golden.

[5] Or rather (?) margin of receptacle.

[6] Spec. 2. Burm. *Fl. ind.* t. 60, fig. 1 (*Anthemis*).—Vent. *Jard. Cels.* t. 25 (*Buphthalmum*).—Del. *Fr. Fl. Arab. petr.* 14, t. 4 (*Buphthalmum*).—Coss. et Dur. *Bull. Soc. bot. Fr.* iii. 742.—Boiss. *Fl. or.* iii. 181.

[7] *Mém. Mus.* iv. t. 1.—Cass. *Dict.* xxi. 111; xxiii. 566.—Less. *Syn.* 419.—DC. *Prodr.* v. 374.—Endl. *Gen.* n. 2400.—*Cryptadia* Lindl. *Endl. Gen.* Suppl. i. 1381.—*Frankia* Steud. *exs. Schimp. arab.* n. 899.

[8] Yellow.

[9] Considered an entire style.

2-seriate.—A glabrous herb; stem short; leaves basal rosulate, soon vanishing; capitules shortly stipitate congested; peduncle soon thickened and hardened to apex, crowned with elongate membranous straight-nerved[1] floral leaves; involucral bracts few dry; receptacle flat paleaceous; exterior pales more rigid enfolding the radial flowers; the interior enfolding the inner flowers thinner, transparent or minute, sometimes 0.[2] (*Levant, Mediter. Africa.*[3])

167. **Geigeria** Griess.[4]—Flowers[5] fertile, 2-morphous; the radial female, 1-seriate, sometimes very few; corolla ligulate, 3-dentate; the discal hermaphrodite; limb of tubular corolla scarcely expanded, 5-fid. Anthers acuminate-caudate at base. Style branches of hermaphrodite flowers linear, acute or obtuse, smooth or papillose. Fruit obconical, 3–4-angled, variously pilose; pappus pales ∞, 1–2-seriate, membranous or transparent, acute, acuminate, muticous or lacerate, sometimes connate quite at base.—Herbs, sometimes subshrubby, glabrous or lanate; stem and branches terete or sometimes (*Diplostemma*[6]) foliately alate on both sides; leaves alternate, entire or dentate, generally glandular-spotted; capitules sessile between leaves, terminal at ends of twigs or dichotomous, sometimes lateral; bracts of ovoid or subspherical involucre ∞, imbricate, unequal; receptacle paleaceous between flowers; pales encircling fruit, lacerate or setose above. (*South and trop. east. Africa, Arabia.*[7])

168. **Rhanterium** Desf.[8]—Flowers[9] fertile, 2-morphous; the radial female, 1-seriate; corolla ligulate, open, 2–3-dentate; the discal hermaphrodite; corolla[10] tubular; limb little expanded, 5-fid. Anthers caudate at acuminate base. Style branches of hermaphrodite flowers narrow flattened, obtuse at apex, externally papillose; of female flowers (when present) subulate. Fruit elongate, 4–5-costate glabrous; hairs of discal pappus few (4–6), thin or rather stiff, more or less dilated at apex, sometimes subplumose; leaves alternate, entire or pectinately dentate; capitules

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[1] Sometimes mistaken for the outer foliaceous bracts of the involucre.

[2] A somewhat anomalous genus in the series.

[3] Spec. 1. *G. micrantha* Desf.—Boiss. *Fl. or.* iii. 240.—*Frankia Schimperi* Steud.

[4] *Linnæa*, v. 411.—DC. *Prodr.* v. 482.—Endl. *Gen.* n 2437.—B. H. *Gen.* ii. 337, n. 293.—*Geigera* Less. *Syn.* 199 (not Schott).—*Dizonium* W. herb.—*Zeyhera* Spreng. f. *Diss.* 92 (ex Less. *loc. cit.*).—*Araschcoolia* Sch. bip. *exs. Kotsch. nubic.* n. 104.

[5] Yellow.

[6] Steud. et Hochst. *exs. Schimp. arab. fel.* n. 853 (*Cichorium*); *DC. Prodr.* vii. 75.—Endl. *Gen.* n. 2966[4].

[7] Spec. about 10. Harv. and Sond. *Fl. cap.* iii. 124.

[8] *Fl. atl.* ii. 291, t. 240.—DC. *Prodr.* v. 463.—Less. *Syn.* 199.—Endl. *Gen.* n. 2425.—B. H. *Gen.* ii. 338, n. 295.

[9] Yellow.

[10] Rather harder at base.

terminal solitary pedunculate; bracts of globular or shortly ovoid involucre ∞, imbricate, ∞-seriate, coriaceous, obtuse or squamosely acuminate[1] at apex; receptacle flat or slightly convex, scarcely foveolate; pales generally enfolding fruit, sometimes in central disk 0.[2] (*North. Africa.*[3])

169? **Oligodora** DC.[4]—Flowers hermaphrodite fertile; limb of regular corolla campanulate. Anthers mucronately-appendiculate at base. Style branches subterete truncate. Fruit oblong, 5-angular-costate glabrous; pappus pales few sub-1-seriate, rather stiff transparent, acutely lacerate above.—A glabrous minutely glandular shrublet; leaves alternate sessile pinnately dentate; teeth subtransverse, 3-angular; capitules[5] terminal, solitary or few; receptacle small hard, sparsely or scarcely paleaceous between the flowers; bracts of oblong involucre unequal, imbricate, rigid or scarious.[6] (*South. Africa.*[7])

170? **Ondetia** Benth.[8]—Flowers 2-morphous; the radial female fertile, 1-seriate; corolla ligulate; the discal hermaphrodite fertile (or the inner sterile?); limb of tubular corolla cylindrical rather stiff, 5-fid to middle or deeper. Anthers ciliolately caudate at base. Style branches of hermaphrodite flowers linear-lanceolate rigid obtuse, slightly hispid at back. Fruit (immature) subterete pilose; pappus pales unequal, sub-2-seriate, terminating in short barbellate hairs; in addition some outer hairs (or upper hairs of the fruit) thin and shorter.—A perennial highly branched glabrous (odorous) herb (subshrubby?); branches thin narrowly alate; leaves alternate linear entire, long decurrent; capitules (rather large) solitary among uppermost leaves; receptacle flat or rather convex, loaded with rigid subscarious pales surrounding the flowers; bracts of broadly hemispherical or depressed globular involucre ∞, imbricate, ∞-seriate, terminating in broad loose scarious appendages; the inmost acute; the outer gradually broader and shorter. (*South-east. Africa.*[9])

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[1] As in *Centaurea* to which, in the form of its capitules, the genus is very analogous.

[2] *Postia* Boiss. (*Fl. or.* iii. 182), with involucral bracts not squamose and pappus constantly double, is apparently a sect. of the genus.

[3] Spec. about 6. Walp. *Ann.* v. 199.

[4] *Prodr.* vi. 282.—Endl. *Gen.* n. 2778.—B. H. *Gen.* ii. 342, n. 308.

[5] Small.

[6] A genus imperfectly known, hardly in place here, from the interfloral pales not being constant, to be referred rather to the *Anthemideæ.*

[7] Spec. 1. *O. dentata* DC.—Harv. and Sond. *Fl. cap.* iii. 303.

[8] *Hook. Icon.* t. 1112; *Gen.* ii. 338, n. 297.

[9] Spec. 1, unknown to us. *O. linearis* Benth. —Oliv. and Hiern, *Fl. trop. Afr.* iii. 368.

171. **Leysera** L.[1]—Flowers[2] fertile 2-morphous; the radial female, 1-seriate; corolla ligulate, entire or dentate; the discal hermaphrodite; limb of regular corolla little or scarcely expanded, 5-dentate, or 5-fid. Anthers[3] with thin longer or shorter caudate appendage at base.[4] Style branches of hermaphrodite flowers truncate at apex.[5] Fruit oblong; angled or costate; pappus hairs in disk oftener short; in ray longer thin, barbellate, ciliate or plumose, sometimes less dissimilar.—Herbs or undershrubs, glabrous or tomentose; leaves alternate, more rarely opposite or congested, linear entire, generally revolute at margin; capitules terminal pedunculate, solitary or more rarely in loose corymbiform or foliate cymes; involucre obconical, campanulate or hemispherical; bracts unequal, ∞-seriate, scarious or transparent at apex; the outer sometimes subherbaceous.[6] (*South. trop. north. Africa, Levant, Australia, south. Europe.*[7])

172. **Arrowsmithia** DC.[8]—Flowers,[9] &c., nearly of *Leysera*;[10] the discal hermaphrodite and mostly sterile. Fruit elongate narrow compressed; the discal mostly effete; pappus 0. A shrub; leaves alternate sessile prickly mucronate rigid, revolute

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[1] *Gen.* n. 965.—J. *Gen.* 179.—LAMK, *Dict.* iii. 468; *Ill.* t. 688.—LESS. *Syn.* 367.—*Leyssera* DC. *Prodr.* vi. 278.—ENDL. *Gen.* n. 2772.—B. H. *Gen.* ii. 327, n. 267.—*Asteropterus* VAILL. *Act. Acad. par.* (1720).—GÆRTN. *Fruct.* ii. 460, t. 173.—*Callicornia* BURM. *Prodr. Fl. cap.* 24.—*Longchampia* W. *Ges. Nat. Fr. Berl. Mag.* (1811), 159.—*Leptophytus* CASS. *Dict. sc. nat.* xxvi. 77.

[2] Yellow.

[3] Sometimes reduced to staminodes and resembling accessory lobes of the corolla.

[4] Appendages sometimes more or less coherent, not truly connate.

[5] In female flower oftener pointed.

[6] Sections of the genus are:

Athrixia KER, *Bot. Reg.* t. 681.—LESS. *Syn.* 364.—DC. *Prodr.* vi. 276.—ENDL. *Gen.* n. 2770.—B. H. *Gen.* ii. 328, 1233, n. 271.—*Chrysodiscus* STEETZ, *Pl. Preiss.* i. 460.—*Asteridia* LINDL. *Sw. Riv. App.* 24.—*Trichostegia* TURCZ. *Bull. Mosc.* (1851), ii. 81.—*Klenzea* SCH. BIP. *Walp. Rep.* ii. 973: flowers all fertile; pappus hairs 1-seriate, scabrous, barbellate or plumose; some shorter sometimes intermixed; bracts of hemispherical, obconical or campanulate involucre, narrow, acute or acuminate, generally scarious. (*South. east. trop. cont. and ins. Africa, Australia.*)

Antithrixia DC. *Prodr.* vi. 277.—ENDL. *Gen.* n. 2771.—B. H. *Gen.* ii. 329, n. 272: flowers all fertile; pappus hairs thin, sub-2-seriate; stem shrubby; leaves alternate or opposite; style branches of hermaphrodite flowers elongate truncate; bracts of narrow-campanulate involucre appressed rigid scarious, ∞-seriate. (*South. and trop. Africa.*)

Heterolepis CASS. *Bull. Soc. philom.* (1820), 26; *Dict.* xxi. 120.—LESS. *Syn.* 58.—DC. *Prodr.* vi. 496.—ENDL. *Gen.* n. 2838.—B. H. *Gen.* ii. 328, n. 270.—*Heteromorpha* CASS. *Bull. Soc. philom.* (1817), 12 (not CHAM.): inner flowers sometimes sterile; hairs rather stiff shortly plumose; stem shrubby; leaves alternate; bracts of hemispherical involucre 2-morphous; the outer subherbaceous narrow; the inner scarious at apex. (*S. Africa.*)

[7] Spec. about 25. JACQ. *Icon. rar.* t. 588; *Hort. schœnbr.* t. 154 (*Œdera*).—HARV. and SOND. *Fl. cap.* iii. 291 (*Athrixia*), 293 (*Antithrixia*), 469 (*Heterolepis*).—BENTH. *Fl. austral.* iii. 599.—SCH. BIP. *Walp. Rep.* ii. 973 (*Klenzea*). BOISS. *Fl. or.* iii. 239.—WILLK. et LGE, *Prodr. Fl. hisp.* ii. 52.—WALP. *Ann.* ii. 904 (*Athrixia*).

[8] *Prodr.* vii. 254.—DELESS. *Ic. sel.* iv. t. 100.—ENDL. *Gen.* n. 3032^2.—B. H. *Gen.* ii. 329, n. 273.

[9] Yellow.

[10] Of which perhaps rather a section.

at margin; bracts of subcampanulate involucre scarious subcoriaceous rigid, appressed, ∞-seriate; receptacle setose between flowers. (*South. Africa.*[1])

173? **Macowania** Oliv.[2]—Flowers,[3] &c., nearly of *Leysera;* the discal hermaphrodite sterile. Fruit elongate, in ray subterete, ∞-striate; pappus hairs few short, sigillately caducous.—A glandular hirsute shrub; leaves alternate sessile linear entire, glandularly setose at revolute margin; capitules terminal in a corymbiform foliate cyme; involucre broadly campanulate; receptacle flat subfoveolate. (*South. Africa.*[4])

174. **Podolepis** Labill.[5]—Flowers[6] nearly of *Leysera,* all fertile or female sometimes irregular; corolla unequally 2–4-fid. Fruit subterete or slightly compressed; pappus hairs ∞, free or shortly connate at base, thin, entire or shortly barbellate, sometimes in female flower few or 0.—Annual or perennial herbs, lanate or finally glabrous; leaves alternate narrow, entire, sometimes amplexicaul; capitules stipitate or subsessile; bracts of subhemispherical or sometimes ovoid involucre ∞, thinly scarious, ∞-seriate; the inner often stipitate, not radiating; receptacle bare. Other characters of *Leysera.* (*Australia.*[7])

175. **Gnaphalium** L.[8]—Flowers[9] all fertile, 2-morphous; the outer of the disklike capitule female, 2-∞-seriate; corolla slender or subfiliform, apex of capitule more or less deeply 3-4-dentate; the inner hermaphrodite (fewer); limb of thin regular corolla little if at all expanded, 5-dentate. Anthers with thin caudate appendage at base. Style branches of hermaphrodite flowers terete or slightly compressed, truncate at little or not dilated apex. Fruit obovoid or oblong, terete or slightly compressed, glabrous, papillose or sericeous; pappus hairs generally 1-seriate,

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[1] Spec. 1. *A. styphelioides* DC.—Harv. and Sond. *Fl. cap.* iii. 524.

[2] *Hook. Icon.* t. 1062.—B. H. *Gen.* ii. 327, n. 268.

[3] "Yellow."

[4] Spec. 1, unknown to us. *M. revoluta* Oliv.

[5] *Pl. N.-Holl.* ii. 56, t. 208.—Less. *Syn.* 367.—DC. *Prodr.* vi. 162.—Endl. *Gen.* n. 2736.—B. H. *Gen.* ii. 328, n. 269.—*Scalia* Sims, *Bot. Mag.* t. 956.—*Scaliopsis* Walp. *Linnæa,* xiv. 318.—*Stylolepis* Lehm. *Linnæa,* v. 385.—*Panætia* Cass. *Dict.* lx. 593.—*Siemssenia* Steetz, *Pl. Preiss.* i. 465.—*Rutidochlamys* Sond. *Linnæa,* xxv. 497.

[6] Radial pink, violet, yellow or whitish.

[7] Spec. about 12. Sweet, *Brit. fl. Gard.* t. 285.—Regl, *Gartenflora,* t. 320.—Benth. *Fl. austral.* iii. 603.—*Bot. Mag.* t. 2904.

[8] *Gen.* 946.—DC. *Prodr.* vi. 222.—Endl. *Gen.* n. 2746.—Payer, *Fam. nat.* 23.—B. H. *Gen.* ii. 305, n. 215.—*Omalotheca* Cass. *Dict.* lvi. 218.—DC. *Prodr.* vi. 245.—*Lucilia* Cass. *Bull. Soc. philom.* (1817); *Dict.* xxvii. 263.—DC. *Prodr.* vii. 45.—Endl. *Gen.* n. 2940.—*Belloa* Remy, *Gay Fl. chil.* iii. 336, t. 38.—*Gamochæta* Wedd. *Chlor. andin.* i. 151.—*Merope* Wedd. *loc. cit.* i. 160, t. 24-26.

[9] White, yellow or pink.

thin, glabrous or longer or shorter plumose, free or connate at base, sometimes sigillately caducous.—Herbs or more rarely undershrubs, sometimes nearly stemless, canescent and variously tomentose or lanate; leaves alternate entire, sessile, decurrent or sometimes petiolate; capitules[1] solitary, sessile or oftener in glomerulous or racemose or corymbose cymes; receptacle very various in form, flat or conical, bare, very shortly fringed or more rarely more or less deeply foveolate; bracts of ovoid, oblong or campanulate involucre ∞, imbricate, quite or to apex scarious (often coloured[2]), ∞-seriate;[3] the outer gradually smaller, often

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[1] Small or minute.

[2] Often whitish, dingy yellow or fuscate.

[3] Sections of the genus are:

Lasiopogon Cass. *Bull. Soc. philom.* (1818), 75; *Dict.* xxv. 302.—DC. *Prodr.* vi. 246.—Endl. *Gen.* n. 2749.—B. H. *Gen.* ii. 304: fruit glabrous or papillose; pappus hairs plumose; stem very small much branched; capitules densely cymose; bracts of campanulate involucre few-seriate. (*Extratrop. N. and S. Africa, Levant.*)

Facelis Cass. *Dict.* xvi. 104.—DC. *Prodr.* vii. 47.—Endl. *Gen.* n. 2942.—B. H. *Gen.* ii. 304, n. 211.—*Pteropogon* Fisch. et Mey. *Ind. sem. Hort. petrop.* vi. 54 (not DC.): fruit densely sericeous; pappus hairs plumose; stem herbaceous, oftener annual: capitules axillar solitary or terminal cymose; involucre ovoid or oblong; inner bracts scarious; outer herbaceous lanate or partly subfoliaceous. (*And. S. America.*)

Achyrocline Less. *Syn.* 332.—DC. *Prodr.* vi. 219.—Endl. *Gen.* n. 2745.—B. H. *Gen.* ii. 305, n. 214: fruit oblong, terete or rather compressed; pappus hairs not or scarcely plumose; stem herbaceous perennial or subshrubby; capitules in dense racemose cymes, few-flowered (4–10); bracts of narrow involucre scarious coloured (white, fuscate or yellowish); outer sparsely lanate. (*Warm N. and S. America, trop. Africa, Madagascar.*)

Antennaria Gærtn. *Fruct.* ii. 410, t. 167.—DC. *Prodr.* vi. 269, sect. 1.—Endl. *Gen.* n. 2767.—B. H. *Gen.* ii. 301, n. 203: flowers diœcious; fruit oblong, glabrous or papillose, ecostate; pappus hairs ∞ (or in abortive hermaphrodite flowers fewer); stem herbaceous perennial cæspitose; capitules solitary or generally crowded and corymbiform cymose; involucral bracts imbricate, ∞-seriate; outer often radiating. (*Europe, Asia, extra trop. N. and S. America, ? Australia.*)

Leontopodium R. Br. *Trans. Linn. Soc.* xii. 124.—Less. *Syn.* 354.—DC. *Prodr.* vi. 275.—Endl. *Gen.* n. 2769.—B. H. *Gen.* ii. 302, n. 207: fruit oblong, glabrous, papillose or hirsute; pappus hairs thin barbellate, connate at base; stem herbaceous perennial cæspitose; leaves hoary lanate or tomentose; capitules in a dense terminal cyme and enveloped in the floral leaves. (*Europe, Asia, mount. America.*)

Chionolæna DC. *Prodr.* v. 397.—Endl. *Gen.* n. 2407.—B. H. *Gen.* ii. 302, n. 206: fruit somewhat terete villose; pappus hairs denticulate, connate at base, 1-seriate; hairs of female flowers oftener clavate at apex; stem shrubby; branches foliaceous; leaves hoary sericeous; capitules androgynous solitary between the uppermost leaves or corymbiform cymose; bracts of campanulate involucre white, deciduous, ∞-seriate. (*S. America, Mexico.*)

Pterygopappus Hook. f.: *Hook. Lond. Journ.* vi. 120; *Fl. tasm.* i. 207, t. 58 B.—B. H. *Gen.* ii. 303, n. 209.—*Maja* Wedd. *Chlor. andin.* i. 228, t. 27: radial fruit oblong small; discal effete; pappus hairs (3–8) barbellate-plumose, sigillately caducous; stem perennial densely cæspitose pulvinate; leaves minute, imbricate; capitules terminal, generally solitary, sessile among uppermost leaves; bracts of ovoid involucre unequal few scarious imbricate. (*Mount. Tasmania.*)

Raoulia Hook. f. *Fl. N.-Zel.* i. 134, t. 36, 37.—B. H. *Gen.* ii. 307, n. 216: female flowers 1–2-seriate; fruit subterete or rather compressed; pappus hairs free or irregularly connate, sometimes thickened at apex; stem densely cæspitose or creeping branched; leaves small, sometimes imbricate, hoary; capitules terminal solitary; bracts of hemispherical or subcampanulate involucre imbricate; inner appressed or radiating; receptacle flat or more or less convex. (*Australia, Tasmania, N. Zealand.*)

Mniodes A. Gray, *Proc. Amer. Acad.* v. 138.—B. H. *Gen.* ii. 301, n. 202: flowers diœcious; fruit subterete (?); pappus hairs ∞, thin, con-lanate at back; the inner sometimes scariously appendiculate. *All warm, temp. and cold regions.*[1])

176 ? **Phagnalon** Cass.[2]—Flowers[3] all fertile (nearly of *Gnaphalium*[4]), 2-morphous; the outer female, ∞-seriate; corolla very slender, nearly equal to style, 2–3-denticulate; the inner hermaphrodite; limb of thinly tubular corolla narrowly campanulate, 5–fid. Anthers obtuse or shortly caudate at base. Style branches obtuse or truncate. Fruit (small) slightly compressed ecostate; pappus hairs ∞, very thin, glabrous or very shortly serrate, persistent or caducous.—Shrubby herbs or shrublets, lanate or glabrous; leaves alternate, narrow, entire or dentate; capitules terminal solitary or loosely cymose or glomerate; other characters of *Gnaphalium*. (*Medit. reg., Canary Is., Levant.*[5])

177. **Chevreulia** Cass.[6]—Flowers[7] (nearly of *Gnaphalium*) 2-morphous; the outer female fertile, ∞-seriate; corolla thin truncate or denticulate; the inner hermaphrodite few, fertile or sterile; limb of thin corolla but slightly expanded, 5-dentate.

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nate at base; discal fewer; thin at apex or thickened or barbellate; stem low densely pulvinate; leaves minute, imbricate, hoary; *capitules terminal*; involucral bracts few, *sometimes* minutely appendiculate; outer lanate at back. (*And. S. America.*)

? *Gnaphalodes* A. Gray, *Hook. Kew Journ.* iv. 228.—B. H. *Gen.* ii. 321, n. 249.—? *Actinobole* Fenzl, Endl. *Gen.* Suppl. iii. 70, n. 2711[1]: flowers all hermaphrodite or female (whence sect. anomalous); pappus hairs few (5, 6) paleaceous-plumose; stem herbaceous dwarf hoary; leaves alternate entire; capitules terminal glomerulate; common involucre consisting of uppermost leaves; single receptacle small; bracts of single involucre ∞, scarious, imbricate. (*Australia.*)

[1] Spec. about 140. Jacq. *Fragm.* t. 81; *Fl. austr.* t. 86.—H. B. K. *Nov. gen. et spec.* iv. t. 329.—Labill. *Pl. N.-Holl.* ii. t. 189.—Del. *Fl. egypt.* t. 44.—Ten. *Fl. nap.* t. 194.—Hombr. et Jacq. *D'Urv. Voy. pôle sud*, t. 11.—Torr. *Whippl. Exp. Bot.* 54.—Chapm. *Fl. S. Unit. St.* 243.—Remy. *C. Gay Fl. chil.* iv. 220, 234 (*Antennaria*).—Benth. *Fl. austral.* iii. 650 (*Raoulia*), 651 (*Antennaria*), 652; 656 (*Pterygopappus*).—Hook. f. *Handb. N.-Zeal. Fl.* 147 (*Raoulia*), 151.—Wedd. *Chlor. andin.* i. 144, t. 24; 148 (*Achyrocline*), 149 (*Antennaria*), 151 (*Gamochæta*), 154, t. 25 B, 26 A (*Lucilia*), 159 (*Belloa*); 160, t. 24–26 (*Merope*).—Harv. and Sond. *Fl. cap.* iii. 260.—Harv. *Thes. cap.* t. 150 (*Lasiopogon*).—Oliv. and Hiern, *Fl. trop. Afr.* iii. 339 (*Achyrocline*), 341.—Phil. *Linnæa*, xxix. 4; xxxiii. 163.—Miq. *Ann. Mus. lugd.-bat.* ii. 178, ii. 90.—Fr. et Sav. *Enum. pl. jap.* i. 241.—Reichb. *Icon. bot.* t. 750, 753, 961; *Ic. Fl. germ.* t. 947 (*Leontopodium*), 948, 949; 950 (*Antennaria*), 952.—Boiss. *Fl. or.* iii. 223 (*Antennaria*), 224.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 61, 63 (*Antennaria*), 64 (*Leontopodium*).—Gren. et Godr. *Fl. de Fr.* ii. 186; 189 (*Antennaria*), 190 (*Leontopodium*).—*Bot. Mag.* t. 1958, 2582.—Walp. *Rep.* ii. 646; 649 (*Antennaria*); vi. 244; *Ann.* i. 423, 424 (*Leontopodium*); v. 278 (*Raoulia*), 282; 286 (*Gnaphalodes*), 289 (*Antennaria*), 290 (*Leontopodium*).

[2] *Bull. Soc. philom.* (1819), 174; *Dict.* xix. 118; xxiii. 561; xxxix. 400.—Endl. *Gen.* n. 2406.—B. H. *Gen.* ii. 304, n. 213.

[3] Yellow.

[4] Of which perhaps rather a section.

[5] Spec. about 12. Sibth. *Fl. græc.* t. 862, 863 (*Conyza*).—Ten. *Fl. nap.* t. 77 (*Conyza*).—Fres. *Mus. Senkenb.* i. t. 4.—Sch. bip. *Webb Phyt. canar.* t. 82, 82 B.—Reichb. *Icon. Fl. germ.* t. 926.—Hook. *Icon.* t. 764.—Boiss. *Fl. or.* iii. 219.—Lowe, *Prim. Fl. mader.* i. 438 (*Gnaphalon*).—Willk. et Lge, *Prodr. Fl. hisp.* ii. 57.—Gren. et Godr. *Fl. de Fr.* ii. 94.—Walp. *Rep.* vi. 134, 721; *Ann.* i. 409; ii. 837.

[6] *Dict.* viii. 516.—Less. *Syn.* 122.—DC. *Prodr.* vii. 44.—Endl. *Gen.* n. 2939.—B. H. *Gen.* ii. 303, n. 210.—*Leucopodum* Gardn. *Hook. Lond. Journ.* iv. 124.

[7] Yellowish (?) or purplish (?).

Anthers long and thinly acuminately caudate at base. Style branches of hermaphrodite flowers shortly or not dilated at apex obtuse. Fruit narrow subterete, glabrous or papillose, 4–5-costate, long rostrate at apex; the central generally effete; pappus hairs ∞, very thin, generally connate quite at base, 1–2-seriate. Low perennial cæspitose herbs, often creeping; leaves opposite (small) entire, oftener hoary; capitules[1] either sessile between the leaves, or[2] long and slenderly pedunculate; receptacle flat bare; bracts of oblong or subcampanulate involucre imbricate few-seriate; the interior longer subscarious, transparent at margin; other characters of *Gnaphalium*. (*Trop. and extra trop. or andine S. America.*[3])

178? **Anaphalis** DC.[4]—Flowers (nearly of *Gnaphalium*[5]) 2-morphous or oftener 1-sexual subdiœcious; the outer hermaphrodite fertile, ∞-seriate (in the nearly male capitules very few or 0). Anthers thinly appendiculate. Style of hermaphrodite flowers thin, undivided, truncate or subcapitellate, sometimes very shortly 2-lobed. Other characters of *Gnaphalium*.—Erect hoary perennial herbs; leaves alternate entire, petiolate, or decurrent on the branch; capitules in congested or corymbiform cymes; involucral[6] bracts scarious imbricate, generally radiating; the inner petaloid-appendiculate. (*Trop. temp. east. Asia, south. Europe, N. America.*[7])

179? **Luciliopsis** Wedd.[8]—Flowers diœcious (nearly of *Gnaphalium*[9]). Fruit subterete; pappus hairs ∞, very thin, connate at base (in vacuous hermaphrodite fruit crispate at base).—Annual or perennial herbs, minute low slender; leaves opposite small; capitules (closely diœcious) sessile solitary; involucral bracts imbricate few-seriate. Other characters of *Gnaphalium*. (*Andine S. America.*[10])

180. **Oligandra** Less.[11]—Flowers (nearly of *Gnaphalium*) poly-

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[1] Small or moderate.

[2] Sometimes in the same plant.

[3] Spec. 5, 6. Dup.-Th. *Fl. Trist. d'Acugna*, 39, t. 8 (*Xeranthemum*).—Pers. *Enchir.* ii. 456 (*Tussilago*).—D'Urv. *Fl. mal.* n. 71.—Remy, *C. Gay Fl. chil.* iii. 330, t. 37, f. 2.—Phil. *Linnæa*, xxxiii. 119.—Wedd. *Chlor. andin.* i. 157, not.—Walp. *Ann.* i. 993.

[4] DC. *Prodr.* vi. 271.—Endl. *Gen.* n. 2768. B. H. *Gen.* ii. 303, n. 208.—*Margaripes* DC. *loc. cit.* 270 (sect. *Margaripes*).

[5] Of which perhaps a sect. (?).

[6] Hoary-tomentose or lanate.

[7] Spec. about 20. Wight, *Icon.* t. 478, 1116–1119.—Miq. *Ann. Mus. lugd.-bat.* ii. 178 (*Antennaria*).—Reichb. *Ic. Fl. germ.* t. 951 (*Gnaphalium*).—*Bot. Reg.* t. 605 (*Antennaria*).—*Bot. Mag.* t. 2468 (*Antennaria*).—Walp. *Ann.* v. 289.

[8]. *Chlor. andin.* i. 159, t. 26 A.—B. H. *Gen.* ii. 201, n. 204.

[9] Of which perhaps a sect (?).

[10] Spec. 2. Benth. exs. *Spruc.* n. 5515.

[11] *Syn.* 123.—DC. *Prodr.* vii. 47.—Endl. *Gen.* n. 2941.—B. H. *Gen.* ii. 302, n. 205.—

gamo-diœcious or monœcious, 2-morphous; corolla in female flower thin, 3–5-fid; in hermaphrodite regular; limb little expanded, equally 5-fid. Anthers thinly acuminately caudate at base. Style of hermaphrodite flowers obtuse at undivided apex. Fruit subterete sericeous; pappus hairs ∞, very thin, connate at base, 1–2-seriate.—Perennial herbs; branches virgate, tomentose or subglabrous; leaves alternate small erect or appressed rigid, imbricate; capitules few aggregated in a terminal glomerule; *receptacle bare*; bracts of oblong involucre ∞, dry imbricate, *∞-seriate; the inmost scarious.* (*Brazil, Columbia.*[1])

181. **Tafalla** Don.[2]—Flowers[3] diœcious (nearly of *Gnaphalium*), *in female capitules fertile;* in male (or pseudo-hermaphrodite) sterile. Anthers acuminate at base.[4] Style entire or shortly 2-fid. Fruit thin (glabrous), 4–5-angled; pappus hairs thin, connate at base, 1-seriate, in abortive fruit clavate at apex.—Shrubs or undershrubs, tomentose, lanate or finally subglabrous; leaves alternate, small thick rigid subamplexicaul and distichously imbricate; capitules (small) sessile at ends of twigs or in axils of uppermost leaves; bracts of campanulate involucre few dry or scarious, 1–2-seriate. Other characters of *Gnaphalium.* (*Andine S. America.*[5])

182. **Amphidoxa** DC.[6]—Flowers (nearly of *Gnaphalium*[7]) 2-morphous; the outer female fertile, ∞-seriate; corolla thin, entire or very shortly dentate; the inner hermaphrodite few, generally sterile; limb of tubular corolla slightly or not dilated, 5-dentate. Anthers with short caudate appendage. Style branches thin, truncate at not or slightly thickened apex. Inner fruit vacuous; pappus hairs few (2–8), penicillately barbate at apex; the outer oblong; pappus 0.—A branched canescent herb, radicant at base; leaves alternate few narrow entire; capitules terminal densely glomerate; exterior bracts of open subcampanulate involucre lanate; interior scarious;[8] receptacle small flat bare. (*S. Africa.*[9])

Hymenopholis Gardn. *Hook. Lond. Journ.* vii. 88.

[1] Spec. 2, 3. Wedd. *Chlor. andin.* i. 158, 230.

[2] *Edinb. New Phil. Journ.* apr.-oct. 1831, 273 (not R. et Pav.).—B. H. *Gen.* ii. 300, n. 201.—*Loricaria* Wedd.—*Thyopsis* Wedd. *Chlor. and.* i. 165, t. 27, A, B, C.

[3] White (?).

[4] Very thinly caudate.

[5] Spec. 3, 4. *Lamk, Dict.* ii. 90, n. 42 (*Conyza*).—Hook. *Bot. Misc.* ii. t. 94; *Icon.* t. 68, 750 (*Baccharis*).

[6] *Prodr.* vi. 246.—Endl. *Gen.* n. 2750.—B. H. *Gen.* ii. 300, n. 199.

[7] Of which perhaps a sect; pappus of fruit poor or sometimes 0.

[8] Fuscate.

[9] Spec. 1. *A. gnaphaloides* DC.—Harv. and Sond. *Fl. cap.* iii. 263.

183? **Demidium** DC.[1]—Flowers[2] nearly of *Gnaphalium*,[3] 2-morphous; the outer female; the inner hermaphrodite;[4] corollas narrow-tubular; limb of hermaphrodite flowers a little broader, 5-dentate. Anthers shortly acuminately caudate at base. Style branches short truncate. Fertile fruit oblong rather terete muriculate ecostate; pappus 0.—Low branched hirsutulate herbs;[5] leaves alternate narrow acute, capitules terminal or axillar raceemiform-cymose; bracts of ovoid or subcampanulate involucre unequal acute few-seriate; receptacle small bare. (*Madagascar.*[6])

184? **Stuartina** Sond.[7]—Flowers nearly of *Gnaphalium*, 2-morphous; exterior female, ∞-seriate; corolla filiform, 2–3-dentate; interior hermaphrodite very few, fertile (or sterile?); corolla tubular, 4-5-dentate; fruit all without ribs or pappus glabrous. —A diffuse canescent or lanate annual;[8] leaves alternate, long petiolate, small broad entire; capitules (very small) glomerulately capitate at ends of twigs, or in upper axils; bracts of ovoid involucre imbricate, ∞-seriate; the inner often acuminate; the outer shorter.[9] (*South Australia.*[10])

185? **Chiliocephalum** Benth.[11]—Flowers 2-morphous, the outer ∞, female fertile; limb of tubular corolla subcampanulate, 3–5-fid; the inner few (1–3), hermaphrodite fertile (?); limb of short-tubular corolla narrow, 5-fid. Anthers caudate at base. Style branches of hermaphrodite flowers truncate at apex. Fruit oblong narrow; pappus 0.—A perennial herb,[12] lanate or tomentose; stem erect, simple below; leaves alternate, sessile or decurrent, entire; capitules[13] ∞, densely corymbiform-cymose; bracts of oblong involucre few transparent scabrous appressed, imbricate; the outermost shorter, generally lanate at back. (*Abyssinia.*[14])

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[1] *Prodr.* vi. 246.—Endl. *Gen.* n. 2751.—B. H. *Gen.* ii. 300, n. 198.

[2] Dull purplish.

[3] Of which rather a sect. (?).

[4] Or male.

[5] Habit of *Filago* or some *Gnaphalia.*

[6] Spec. 1 (v. 2?).

[7] *Linnæa,* xxv. 521.—B. H. *Gen.* ii. 300, n. 197.

[8] Habit of *Filago* or some smaller *Gnaphalia.*

[9] A plant quite unknown to us, perhaps, from authorities, a congener of *Demidium* ; ? a sect. of *Gnaphalium*, fruit epappous?

[10] Spec. 1. *S. Muelleri* Sond.—Benth. *Fl. austral.* iii. 657.

[11] *Hook. Icon.* 34, t. 1137; *Gen.* ii. 300, n. 200.—*Kralikia* Sch. bip. *Schweinf. Beitr. Fl. æthiop.* 151 (not Coss. et Dur.).

[12] Habit of *Achyrocline* (to which the genus is very near).

[13] Very small.

[14] Spec. 1. *C. myriocephalum.*—*C. Schimperi* Benth.—Oliv. and Hiern, *Fl. trop. Afr.* iii. 337.—*C. Schultzii* Buching.—*Kralikia myriocephala* Sch. bip.

186. **Helichrysum** Gærtn.[1] — Flowers[2] 1–2-morphous; the outer female, rarely few-seriate, oftener few, unequally 1-seriate or 0; corolla slender scarcely or minutely 2–4-dentate; the inner hermaphrodite fertile (or the inmost sterile); limb of corolla little expanded, 4–5-dentate. Anthers minutely or shortly auriculate at sagittate base, or thinly caudate, or more rarely branched or oftener short or longer and setaceously appendiculate. Style branches of hermaphrodite flowers truncate or capitellate at apex. Fruit terete or slightly compressed, terete or 5-angled, or more rarely 10-sulcate; pappus hairs smooth, scabrous, more or less long-barbellate, plumose only from base or apex. Other characters of *Gnaphalium*.—Herbs, undershrubs or shrubs, oftener lanate or tomentose; leaves[3] alternate or partly opposite entire; capitules[4] 2-∞-florous, solitary or corymbiform-cymose or glomerulate; involucre very variable in form, ovoid, tubular, globular, hemispherical or campanulate; bracts[5] ∞, imbricate, ∞-seriate, from the base or partly scarious, sometimes appendiculate, erect or open;[6] receptacle flat, hemispherical or more or less

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[1] *Fruct.* ii. 404 (*Elichrysum*).—DC. *Prodr.* vi. 169; vii. 298.—Spach, *Suit. à Buffon*, x. 210.—Endl. *Gen.* n. 2741.—B. H. *Gen.* ii. 309, n. 220.—? *Trichandrum* Neck. *Elem.* i. 84.—*Petalolepis* Cass. *Bull. Soc. philom.* (1817), 138; *Dict. sc. nat.* xxxix. 194 (not Less.).—DC. *Prodr.* vi. 164.—*Lepicline* Cass. *Bull. Soc. philom.* (1818), 31; *Dict.* xxvi. 49 (*Lepiscline*).—*Edmondia* Cass. *Dict.* xiv. 252.—*Faustula* Cass. *Dict.* xvi. 251.—*Leucostemma* Don. *Mem. Wern. Soc.* v. 540.—*Euchloris* Don, *loc. cit.* 548.—*Pentataxis* Don, *loc. cit.* 550.—*Ozothamnus* R. Br. *Trans. Linn. Soc.* xii. 125.—DC. *Prodr.* vi. 164.—Endl. *Gen.* n. 2738.—*Cladochæta* DC. *Prodr.* vi. 245.—*Swammerdamia* DC. *loc. cit.* 164.—*Aphelexis* Boj. ex DC. *Prodr. loc. cit.* 217 (not Don).—Endl. *Gen.* n. 2743.—*Freemania* Boj. (ex DC.).—*Lawrencella* Lindl. *Swan Riv. App.* 23.—*Xanthochrysum* Turcz. *Bull. Mosc.* (1851), i. 199, t. 4.—*Argyrophanes* Schlchtl. *Linnæa*, xx. 596.—*Chrysocephalum* Walp. *Linnæa*, xiv. 503.—*Acanthocladium* F. Muell. *Fragm. phytogr. Austral.* ii. 155.—*Argyroglottis* Turcz. *Bull. Mosc.* (1851), ii. 83, t. 1.—*Conanthodium* A. Gray, *Hook. Kew Journ.* iv. 272.—*Manopappus* Sch. bip. *Flora* (1844), 677.

[2] Yellow or dull purple.

[3] Flat or recurved at margin.

[4] Large, moderate or small, often pretty or showy.

[5] White, yellow, golden, pink, purple, sometimes fuscate or dull red.

[6] Sections of the genus are:

Argyrocome Gærtn. *Fruct.* ii. 410 (part.) — Schr. in *Ac. Wiss. Münch. Denkschr.* viii. 146–163.—*Anaxeton* Schr. *loc. cit.* 146, 162 (part.).—*Helipterum* DC. *Prodr.* vi. 211.—Endl. *Gen.* n. 2741.—B. H. *Gen.* ii. 308, n. 219.—*Astelma* R. Br. *Bot. Reg.* sub. t. 532.—*Damironia* Cass. *Dict.* lvi. 224.—*Syncarpha* DC. *Ann. Mus.* xvi. 205, t. 5, fig. 31.—*Pteropogon* DC. *Prodr.* vi. 245 (not F. and Mey.).—*Rhodanthe* Lindl. *Bot. Reg.* t. 1703.—*Xyridanthe* Lindl. *Sw. Riv. App.* 23.—*Hyalospermum* Steetz, *Pl. Preiss.* i. 476.—*Anisolepis* Steetz, *loc. cit.* 446.—*Dimorpholepis* A. Gray, *Hook. Kew Journ.* iv. 227.—*Monencyanthes* A. Gray, *loc. cit.* 229.—*Acroclinium* A. Gray, *loc. cit.* 270.—*Triptilodiscus* Turcz. *Bull. Mosc.* (1851), ii. 66.—*Duttonia* F. Muell. *Linnæa*, xxv. 409.—? *Roccardia* Neck. *Elem.* i. 74.—? *Argyranthes* Neck. *loc. cit.* 75: pappus hairs plumose from base; other characters of *Euhelichrysum*. (*Australia, S. Africa.*)

Waitzia Wendl. *Collect.* ii. 13, t. 42.—B. H. *Gen.* ii. 307, n. 218.—Gaudich. *Freyc. Voy. Bot.* 466, t. 89.—*Morna* Lindl. *Bot. Reg.* t. 1941; (1838), t. 9.—*Pterochæta* Steetz, *Pl. Preiss.* i. 455: fruit rostrate; pappus hairs plumose; involucral bracts appressed, lax or more rarely radiating. (*Australia.*)

Leptorhynchus Less. *Synops.* 273.—DC. *Prodr.* vi. 159.—Endl. *Gen.* n. 2732.—B. H. *Gen.* ii.

convex, bare, foveolate, alveolate, fringed or paleaceous between flowers. (*All warm old world reg.*[1])

307, n. 217.—*Rhytidanthe* Benth. *Hueg. Enum.* 63: fruit rostrate or contracted above; pappus hairs scabrous, barbellate or shortly plumose above; involucral bracts not radiating, scarious at apex transparent. (*Australia.*)

Leontonyx Cass. *Dict.* xxv. 466.—Less. *Syn.* 325.—DC. *Prodr.* vi. 167.—Endl. *Gen.* n. 2740.—B. H. *Gen.* ii. 312, n. 223.—*Spiralepis* Don, *Mem. Werner. Soc.* v. 551: fruit oblong, 4–5-angled; pappus hairs ∞, thin or denticulate above, ∞-seriate; involucral bracts scarious or coloured at apex. (*South Africa.*)

Ammobium R. Br. *Bot. Mag.* t. 2459.—DC. *Prodr.* vi. 153.—Endl. *Gen.* n. 2723.—B. H. *Gen.* ii. 316, n. 235: fruit angular; pappus hairs paleaceous, connate at base in an unequally dentate or aristate cupule; receptacle paleaceous between flowers; involucral bracts petaloid, appressed scarious or radiating. (*Australia.*)

Cephalipterum A. Gray, *Hook. Kew Journ.* iv. 271.—B. H. *Gen.* ii. 321, n. 248: fruit lanate; inner pappus hairs few (3–6) ciliate, penicillate at apex; outer paleaceous more or less connate in a cupule; capitules small ∞, in a globular glomerule; bracts of single involucre radiating above, coloured (*Australia*). Sect. like the preceding anomalous in the genus but difficult to separate from it.

Phænocoma Don, *Mem. Werner. Soc.* v. 554.—DC. *Prodr.* vi. 266.—Endl. *Gen.* n. 2764.—B. H. *Gen.* ii. 313, n. 226; fruit villose; pappus hairs setose, scabrous or denticulate at apex; stem somewhat shrubby rigid; outer flowers female fertile, sub-1-seriate; inner hermaphrodite ∞, sterile (vacuous fruit costate); involucral bracts rigid; inner appendiculate scarious (coloured) longer; outer shorter, scarious at margin. (*S. Africa.*)

Schœnia Steetz, *Pl. Preiss.* i. 480.—B. H. *Gen.* ii. 314, n. 227: fruit fertile plano-compressed, long-ciliate at margins; pappus hairs connate at base, barbellate or shortly plumose; stem herbaceous annual; capitules in loosely corymbiform cymes. (*Australia.*)

Petalacte Don, *Mem. Werner. Soc.* v. 552.—DC. *Prodr.* vi. 267.—Endl. *Gen.* n. 2765.—B. H. *Gen.* ii. 314, n. 229.—*Petalolepis* Less. *Syn.* 357 (not Don): receptacle paleaceous; outer hermaphrodite flowers subtended by pales; inner pales surrounding female flowers; other characters of *Euhelichrysum*. (*S. Africa.*)

Anaxeton Cass. *Dict.* xxxiv. 37 (not Gærtn.).—DC. *Prodr.* vi. 267.—Endl. *Gen.* n. 2766.—B. H. *Gen.* ii. 314, n. 228: fruit of female flowers subterete papillose striated; pappus hairs short or very short barbellate; stem shrubby or subshrubby; capitules (small) in corymbiform cymes; inner bracts of involucre petaloid-appendiculate; receptacle epaleaceous; other characters of *Petalacte*. (*S. Africa.*)

Stenocline DC. *Prodr.* vi. 218.—Deless. *Ic. sel.* iv. t. 53.—Endl. *Gen.* n. 2744.—B. H. *Gen.* ii. 312, n. 221: fruit (nearly of *Euhelichrysum*) rather large; generally 10-sulcate; bracts of involucre few seriate erect, unequal or subequal, nearly petaloid from base; flowers in capitule few (3–5), 1-morphous. (*Madagascar, Brazil.*)

Leucopholis Gardn. *Hook. Lond. Journ.* ii. 10.—B. H. *Gen.* ii. 312, n. 222: flowers, &c., of *Stenocline*; capitules in a contracted glomerule; flowers few (3–10); common receptacle villose. (*Brazil.*)

Cassinia R. Br. *Trans. Linn. Soc.* xii. 126 (not in *H. kew.*).—Cass. *Dict.* xxxiv. 504.—Less. *Syn.* 272 (part.).—Endl. *Gen.* n. 2726.—B. H. *Gen.* ii. 313, n. 225 (part.): fruit subterete or angled; pappus hairs free or connate at base; anthers very shortly or scarcely caudate at base; stem shrubby; involucral bracts erect or connivent; flowers 1-morphous hermaphrodite. (*Australia.*)

Rhynea DC. *Deless. Ic. sel.* iv. t. 52; *Prodr.* vi. 154.—Endl. *Gen.* n. 2725: stem shrubby; anthers rather long-simply or ramose-setose-caudate; inner bracts of involucre petaloid-appendiculate; flowers hermaphrodite, or outer few female. (*N. Zealand, S. Africa.*)

Rutidosis DC. *Prodr.* vi. 158.—B. H. *Gen.* ii. 316, n. 234.—*Rytidosis* Endl. *Gen.* n. 2729.—*Pumilo* Schlchtl, *Linnæa*, xxi. 448.—*Actinopappus* Hook. f. ex A. Gray, *Hook. Kew Journ.* iv. 226: pappus pales entire, barbellate-lacerate or shortly plumose; stem annual; bracts of ovoid or hemispherical involucre broad very scarious, loosely imbricate. (*Australia.*)

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[1] Spec. 350 (enum. 460). Labill. *Pl. N.-Holl.* ii. t. 180, 181 (*Eupatorium*), 182–184 (*Chrysocoma*), 185, 186 (*Chrysocoma*), 187, 188 (*Gnaphalium*), 190, 192; *Pl. syr. Dec.* ii. t. 4 *Xeranthemum*).—Moris, *Fl. sard.* t. 82.—Sibth. *Fl. græc.* t. 857–860 (*Gnaphalium*).—Ten. *Fl. nap.* t. 192 (*Gnaphalium*).—Vent. *Jard. Malm.* t. 2 (*Xeranthemum*).—Wight, *Icon.* t. 1113.—Webb, *Phyt. canar.* t. 109.—Hook. *Icon.* t. 318 (*Helipterum*), 320; 856 (*Dimorpholepis*). 1115 (*Leucopholis*).—Gaudich. *Freycin. Voy. Bot.* t. 87, 88 (*Elichrysum*), 90 (*Ammobium*).—Viv. *Fragm. Fl. ital.* t. 19 (*Gnaphalium*).—Hombr. et Jacquin. *Voy. Pôle sud, Bot.* t. 5 (*Ozothamnus*).—Dietr. *Fl. univ.*

187? **Pachyrhynchus** DC.[1]—Flowers 1-morphous, hermaphrodite and all fertile; limb of regular tubular corolla 5-dentate. Anthers . . . ? Style . . . ? Fruit ovoid (highly villose) attenuated to a thick (glabrous) beak; pappus hairs[2] scarcely scabrous, ∞-seriate.—An erect branched hoary-tomentose undershrub; leaves alternate rather crowded sessile, oblong or lanceolate, callosely apiculate, entire; inner bracts of oblong involucre[3] scarious nitid, finally open; the outer shorter foliaceous villose. (*South Africa?*[4])

188. **Quinetia** Cass.[5]—Flowers all fertile, 1-morphous; limb of regular tubular corolla 4–5-dentate. Anthers very shortly or not caudate at sagittate base. Style branches subulate. Fruit long-obconical not rostrate thinly striate; pappus pales few (3–10), dilated at base translucent, long acuminate at apex.—A short close-growing annual; leaves alternate petiolate, entire acute or rather obtuse; capitules small terminal or sublateral few- (1–4) flowered; receptacle minute; involucral bracts very few, loosely imbricate. (*Australia.*[6])

189? **Scyphocoronis** A. Gray.[7]—Flowers hermaphrodite fertile, 1-morphous; limb of tubular corolla little expanded or

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t. 4, 5.—Raoul, *Choix pl. N.-Zél.* t. 16 (*Swammerdamia*).—Ferr. et Galin. *Voy. Abyss.* t. 13.—Gardn. *Hook. Lond. Journ.* vii. 419 (*Achyrocline*).—Sweet, *Brit. fl. Gard.* ser. 2, t. 48 (*Ammobium*), 295 (*Rhodanthe*).—Andr. *Bot. Repos.* t. 51 (*Helipterum*), 242, 262 (*Xeranthemum*), 279, 327, 374 (*Xeranthemum*), 375, 384, 387, 487, 489 (*Gnaphalium*), 561, 650, 652 (*Xeranthemum*), 654 (*Gnaphalium*).—Hook. f. *Ant. Fl.* t. 21; *Fl. tasm.* t. 17 (*Ozothamnus*), 54, 59, 60; 61 (*Helipterum*); *Fl. N.-Zel.* t. 35 (*Ozothamnus*) 36, 37; *Handb. N.-Zeal. Fl.* 144 (*Rhynea*), 145 (*Cassinia*), 146 (*Ozothamnus*).—Regl, in *Gartenflora*, t. 401 (*Waitzia*).—F. Muell. *Pl. Vict.* t. 43 (*Cassinia*).—A. Gray, *Hook. Kew Journ.* iv. 229 (*Pteropogon*), 268.—Benth. *Fl. austral.* iii. 577 (*Cephalipterum*), 583 (*Ammobium*), 584 (*Cassinia*), 593 (*Rutidosis*), 607 (*Leptorhynchus*), 611 (*Schœnia*), 612; 634 (*Waitzia*), 637 (*Helipterum*).—Remy, *C. Gay Fl. chil.* iv. 218.—Harv. and Sond. *Fl. cap.* iii. 204 (*Rhynea*), 205 (*Leontonyx*), 207; 256 (*Helipterum*), 287 (*Phænocoma*), 288 (*Petalacte*), 289 (*Anaxeton*).—Oliv. and Hiern, *Fl. trop. Afr.* iii. 345.—Bak. *Fl. maur.* 167.—Boiss. *Diagn. or.* ser. 2, v. 110 (*Gnaphalium*); *Fl. or.* iii. 228.—Reichb. *Ic. Fl. germ.* t. 950, 952; *Iconogr.* t. 393 (*Gnaphalium*).—Willk. et Lge, *Prodr. Fl. hisp.* ii. 58.—Gren. et Godr. *Fl. de Fr.* ii. 183.—*Bot. Reg.* t. 21, 240, 243 (*Gnaphalium*), 678, 764 (*Cassinia*), 726 (*Astelma*), 1814; (1838), t. 58.—*Bot. Mag.* t. 300 (*Gnaphalium*), 420 (*Xeranthemum*), 435; 1697 (*Pteronia*), 1773, 1802, 1987, 2159, 2328, 2365, 2710 (*Gnaphalium*), 2881 (*Elichrysum*), 3483, 3857; 4560 (*Schœnia*), 4801 (*Acroclinium*), 5283, 5290 (*Rhodanthe*), 5342, 5443 (*Waitzia*), 5350 (*Helipterum*).—Walp. *Rep.* ii. 645 (*Leptorhynchus*), 646, 992; vi. 232 (*Leptorhynchus*), 233 (*Waitzia*), 237 (*Swammerdamia, Chrysocephalum*), 238 (*Ozothamnus*), 239; 242 (*Helipterum*), 243 (*Schœnia*), 249 (*Petalacte*); *Ann.* i. 422; ii. 898; 901 (*Helipterum*).

[1] *Prodr.* vi. 255.—Endl. *Gen.* n. 2756.—B. H. *Gen.* ii. 313, n. 224.

[2] Longer than corolla. [3] "Straw-coloured."

[4] Spec. 1, of doubtful affinity, seen by no one but the author: *P. xeranthemoides* DC.—Harv. and Sond. *Fl. cap.* iii. 273.

[5] *Dict. sc. nat.* lx. 579, 590.—DC. *Prodr.* vi. 158.—Endl. *Gen.* n. 2728.—B. H. *Gen.* ii. 316, n. 233.

[6] Spec. 1. *Q. Urvillei* Cass.—Benth. *Fl. austral.* iii. 595.

[7] *Hook. Kew Journ.* iv. 225.—B. H. *Gen.* ii. 316, n. 236.

subcampanulate, 5-fid. Anthers very thinly appendiculate. Style branches sublanceolate, obtuse at apex. Fruit terete papillose, crowned with a short truncate (subherbaceous) cupule.—A dwarf glandular pilose annual; leaves alternate or sometimes opposite, linear entire; capitules (small) shortly pedunculate; bracts of cylindrical involucre few narrow slightly unequal; receptacle small bare." (*Australia.*[1])

190. **Millotia** Cass.[2]—Flowers[3] hermaphrodite fertile, 1-morphous; limb of tubular corolla campanulate, 4–5-fid. Anthers rather long or scarcely setaceous-appendiculate at base. Style branches of hermaphrodite flowers conically appendiculate at apex. Fruit terete, long attenuated or rostrate at apex; pappus hairs barbellate or ciliately plumose, connate or free at base, sometimes short, often few.—A low annual, lanate or glabrous; leaves alternate narrow entire; capitules stipitate at ends of twigs; bracts of ovoid or subcylindrical involucre small, sometimes contiguous in a tube, often hoary externally; receptacle small bare.—(*Australia.*[4])

191. **Podotheca** Cass.[5]—Flowers hermaphrodite regular, 1-morphous; tube of regular corolla[6] linear straight; limb little expanded minute, 5-fid. Anthers thinly or scarcely appendiculate at base. Style branches truncate or capitate at apex. Fruit terete or angled, suddenly attenuated at base to a thin almost no stipes[7] or thickened to a ring; pappus hairs ∞, often few, sometimes dilated and connate at base, ciliate or more or less long-plumose.—Scabrous or glabrous annuals; leaves alternate entire; capitules[8] terminal pedunculate; peduncle often thickened above; receptacle flat raised in a short sheath around stipes of fruit; bracts of conical, campanulate or tubular involucre imbricate unequal or nearly equal.[9] (*Australia.*[10])

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[1] Spec. 1, unknown to us, *S. viscosa* A. Gray.—Benth. *Hook. Icon.* t. 845; *Fl. austral.* iii. 593.—*Toxanthus major* Turcz. *Bull. Mosc.* (1851), ii. 64.

[2] *Dict.* lx. 592.—Less. *Syn.* 273.—DC. *Prodr.* vi. 161.—Endl. *Gen.* n. 2733.—B. H. *Gen.* ii. 315, n. 232.

[3] Often yellow.

[4] Spec. 2. Benth. *Fl. austral.* iii. 596.—F. Muell, *Fragm.* iii. t. 19.

[5] *Dict.* xxiii. 561.—DC. *Prodr.* vi. 159.—Endl. *Gen.* n. 2731.—B. H. *Gen.* ii. 315, n. 231.—*Phænopoda* Cass. *loc. cit.* xlii. 84.—*Podosperma* Labill. *Pl. N.-Holl.* ii. 35, t. 177 (not Less.).—*Lophoclinium* Endl. *Bot. Zeit.* (1843), 457.

[6] Yellow.

[7] Often persistent on receptacle after fall of fruit.

[8] Rather large or moderate, often elongate sometimes nearly of *Scorzonera.*

[9] We make a sect of the genus *Ixiolæna* Benth. *Hueg. Enum.* 66.—Endl. *Gen.* n. 2734.—B. H. *Gen.* ii. 315, n. 230; stalk of fruit (thickened at base) thinner or subnil and sheath of receptacle more or less raised; involucral bracts narrow rigid, ∞-seriate; blades (coloured) very small.

[10] Spec. about 5 Turcz. *Bull. Mosc.* (1851),

192. **Ixodia** R. Br.[1]—Flowers hermaphrodite fertile, 1-morphous; limb of regular tubular corolla scarcely expanded, 5-dentate. Anthers with a thin caudate appendage at base. Style branches truncate or subcapitate at apex. Fruit oblong, terete or angular papillose, without pappus.—Herbs or shrubs, glabrous or sparsely lanate; leaves alternate narrow entire; capitules in loose corymbiform or crowded cymes;[2] receptacle small, nearly bare or (*Pithocarpa*[3]) paleaceous; involucral bracts ∞; the outer shorter acute; the inner terminating in an obtuse radiating petaloid[4] blade. (*Australia.*[5])

193. **Humea** Sm.[6]—Flowers hermaphrodite fertile, 1-morphous; limb of tubular corolla campanulate or little expanded. Anthers long acuminate at apex, with various auriculate appendages at base. Style branches truncate or subcapitate at apex. Fruit elongate narrow, sometimes papillose, without pappus.—Herbs undershrubs or shrublets, glabrous, glandular or tomentose; leaves alternate entire; capitules[7] in a more or less compound-ramose or corymbiform or cymiferous raceme, few (1–4) flowered; bracts of more or less elongate involucre loose few-seriate, imbricate, scarious or petaloid;[8] the outer shorter; receptacle small, sometimes ramiform, bare. (*Australia.*[9])

194? **Acomis** F. Muell.[10]—"Flowers hermaphrodite fertile, 1-morphous; limb of tubular corolla little expanded, 5-dentate. Anthers thinly caudately appendiculate at base. Style branches elongate truncate. Fruit oblong or sublinear glabrous, without pappus.—Erect slender herbs glabrous or lanate; leaves alternate linear lanceolate entire; capitules (rather small) slenderly pedunculate at ends of twigs; receptacle convex bare; bracts of broadly

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ii. 80 (*Helipterum*).—A. Gray, *Hook. Kew Journ.* iv. 271 (*Acroclinium*).—Steetz, *Pl. Preiss.* i. 459 (*Ixiolæna*).—Benth. *Fl. austral.* iii. 597 (*Ixiolæna*), 600.—*Bot. Mag.* t. 3920.

[1] *Ait. Hort. kew.* 12, iv. 517; *Bot. Mag.* t. 1534 (not Sol.).—Less. *Syn.* 272.—DC. *Prodr.* vi. 153.—Endl. *Gen.* n. 2724.—B. H. *Gen.* ii. 318, n. 242

[2] Inflorescence, apparently, nearly of *Achillea*.

[3] Lindl. *Sw. Riv. App.* 23.—Endl. *Gen.* n. 2727[1].—B. H. *Gen.* ii. 318, n. 241.

[4] White.

[5] Spec. 2. Schlchtl. *Linnæa*, xx. 493.—Sond. *Linnæa*, xxv. 495.—Steetz, *Pl. Preiss.* 445 (*Pithocarpa*).—F. Muell. *Linnæa*, xxv. 405.—Benth. *Fl. austral.* iii. 582; 590 (*Pitho-*

[6] *Exot. Bot.* i. t. 1 (not Roxb.).—Cass. *Dict.* xxii. 39.—Less. *Syn.* 272.—DC. *Prodr.* vi. 157.—Endl. *Gen.* n. 2727.—B. H. *Gen.* ii. 317, n. 239.—*Calomeria* Vent. *Malmais.* t. 73.—*Razumovia* Spreng. (herb. not *Syst.*).—*Agathomeria* Delaun. *B. Jardin.* (1805).—*Oxypheria* hortul.—*Hæckeria* F. Muell. *Trans. Phil. Soc. Vict.* i. 45; *Hook. Kew Journ.* viii. 150; *Linnæa*, xxv. 406; *Pl. Vict.* t. 44.

[7] Small or very small.

[8] Purple, pale or deep yellow, sometimes, like the whole plant, highly odorous.

[9] Spec. 4, one of which is often cultivated. F. Muell. *Fragm.* i. 17; iii. 137; xi. 86.—Benth. *Fl. austral.* iii. 589.

[10] *Fragm. Phyt. Austral.* ii. 89; iv. 145.—B. H. *Gen.* ii. 89.

hemispherical involucre imbricate, thinly scarious, ∞-seriate; the outer gradually shorter." (*Australia.*[1])

195? **Eriochlamys** Sond. & F. Muell.[2]—Flowers hermaphrodite fertile, 1-morphous; corolla tubular, generally lanate at base; limb little expanded, 5-dentate. Anthers shortly mucronately caudate. Style branches truncate at somewhat thickened apex. Fruit oblong without pappus.—A small spreading tomentose herb; leaves alternate linear entire; capitules solitary or glomerate, sessile; involucre globular or broadly ovoid and enveloped in a dense wool; bracts small erect, scarious at apex, few-seriately imbricate; receptacle slightly convex bare.[3] (*Australia.*[4])

196. **Toxanthus** Turcz.[5]—Flowers nearly of *Eriochlamys*, 1-morphous; corolla thin recurved. Style branches lanceolate at papillose apex. Fruit terete, at attenuated apex continuous with corolla, without pappus.[6]—A very small annual, pubescent or lanate, often finally glabrous; leaves alternate linear entire; capitules solitary or glomerate, shortly stipitate or sessile; bracts of oblong or cylindrical involucre few unequal or subequal narrow herbaceous. Other characters of *Eriochlamys*. (*Australia.*[7])

197. **Craspedia** Forst.[8]—Flowers capitellate; heads 1-∞-flowered, capitate on a common receptacle; all hermaphrodite and fertile, 1-morphous; corolla regular tubular, 4–5-dentate. Anthers short or long caudate-acuminate at base. Style branches subterete, truncate at apex. Fruit (small) more or less compressed; pappus hairs 1-∞, sometimes paleaceous or plumose-ciliate, free or connate at base; sometimes shorter than cupuliform pappus or 0.—Annual or perennial herbs, rarely frutescent, sometimes sericeously or silvery lanate; leaves alternate or rarely subopposite, sometimes rosulate at base; capitules[9] terminal solitary or glomerate; bracts of common involucre ∞, more or less

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[1] Spec. 2. Benth. *Fl. austral.* iii. 591.

[2] *Linnæa*, xxv. 488.—B. H. *Gen.* ii. 317, n. 238.

[3] A genus certainly very analogous to the *Augianthеæ*.

[4] Spec. 1. *E. Behrii* Sond. et F. Muell.—Benth. *Fl. austral.* iii. 591.

[5] *Bull. Mosc.* (1851), i. 176.—B. H. *Gen.* ii. 317, n. 237.—*Anthocerastes* A Gray, *Hook. Kew Journ.* iv. 225.

[6] Somewhat resembling those of *Millotia*.

[7] Spec. 2. Sond. *Linnæa*, xxv. 480 (*Anthocerastes*).—Benth. *Fl. austral.* iii. 592.

[8] *Prodr.* 58 (1776).—Cass. *Dict. sc. nat.* xxii. 105.—Less. *Syn.* 271.—DC. *Prodr.* vi. 152.—Endl. *Gen.* n. 2721.—B. H. *Gen.* ii. 322, n. 251.—*Richea* Labill. *Voy.* i. 186, t. 16.—*Pycnosorus* Benth. *Hueg. Enum.* 63.

[9] Rather large or small, subglobular, ovoid, or oblong, yellow, whitish or purplish.

scarious; heads 2-∞-bracteate; single receptacles bare or paleaceous.[1] (*Australia*, *N. Zealand.*[2])

198. **Chthonocephalus** Stutz.[3]—Flowers hermaphrodite fertile; 1-morphous; corolla thinly tubular, 4–5-dentate. Anthers rather long or very shortly caudately acuminate at base. Style branches subterete truncate. Fruit small slightly compressed; pappus annular fringed or 0.—A dwarf herb, subacaulous or cæspitose; leaves alternate or basal rosulate entire; heads small, ∞-flowered, collected in a globular or depressed capitule involucrated by a few unequal bracts; single involucre of head consisting of a few imbricate bracts, scarious or lanate at back or margin; receptacle of single head paleaceous between the flowers. (*Australia.*[4])

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[1] We make the following sections of the genus, the single receptacle (of the capitels) being mostly epaleaceous:

Calocephalus R. Br. *Trans. Linn. Soc.* xii. 106.—Less. *Syn.* 271.—Endl. *Gen.* n. 2718.—B. H. *Gen.* ii. 320, n. 247.—*Leucophyta* R. Br. *loc. cit.*—DC. *Prodr.* vi. 152.—Endl. *Gen.* n. 2720.—*Pachysurus* Steetz, *Pl. Preiss.* i. 441.—*Blennospora* A. Gray, *Hook. Kew Journ.* iii. 172.—*Achrysum* A. Gray, *loc. cit.* iv. 228: common capitule globose, conical or branched, bracts of common involucre few or 0; capitels sometimes stipitate, 2-∞-florous; bracts of single involucre ∞, erect or radiating scarious; pappus hairs 5-∞, plumose-ciliate at apex or from base.

Hyalolepis DC. *Prodr.* vi. 149.—Endl. *Gen.* n. 2712.—? *Hirnellia* Cass. *Bull. Soc. philom.* (1820); *Dict.* xxi. 199.—*Myriocephalus* Benth. *Hueg. Enum.* 61.—Endl. *Gen.* n. 2716.—*Antheidosorus* A. Gray, *Hook. Kew Journ.* iii. 173.—*Gilberta* Turcz. *Bull. Mosc.* (1851), i. 192.—*Lamprochlæna* F. Muell. *Fragm.* iii. 157.—*Elachopappus* F. Muell. *loc. cit.*: involucre of subglobose or hemispherical common capitule consisting of ∞ bracts narrow, ∞-seriate, generally scarious-appendiculate at apex; capitel 1-few-flowered, 2-few-bracteate; pappus hairs, 1-∞, sometimes subpaleaceous or 0.

Gnephosis Cass. *Bull. Soc. philom.* (1829), 43; *Dict.* xix. 127.—DC. *Prodr.* vi. 151.—Endl. *Gen.* n. 2717.—B. H. *Gen.* ii. 320, n. 246.—*Crossolepis* Less. *Syn.* 270.—Endl. *Gen.* 444.—A. Gray, *Hook. Kew Journ.* iii. 175.—*Nematopus* A. Gray, *Hook. Kew Journ.* iii. 150. *Leptotriche* Turcz, *Bull. Mosc.* (1851), ii. 73.—*Cyathopappus* F. Muell. *Fragm.* ii. 157.—*Trichanthodium* Sond. et F. Muell. *Linnæa*, xxv 489: common receptacle elongate narrow; bracts of common involucre few or 0; capitels generally stipitate, 1-few-flowered, ∞-bracteate; pappus shortly paleaceous or 0.

Siloxerus Labill. *Pl. N.-Holl.* ii. (1806), 57, t. 209.—*Styloncerus* Spreng. *Syst.* iii. 356.—*Angianthus* Wendl. *Collect.* ii. 31, t. 48.—DC. *Prodr.* vi. 150.—Endl. *Gen.* n. 2714.—B. H. *Gen.* ii. 319.—*Ogcerostylus* Cass. *Dict. sc. nat.* xlix. 221.—*Skirrophorus* DC. *Prodr.* vi. 150.—Deless. *Ic. sel.* iv. t. 51.—Lindl. *Sw. Riv. App.* 24.—*Chrysocoryne* Endl. *Bot. Zeit.* (1843), 457.—*Crossolepis* Benth. *Hueg. Enum.* 61; *Hook. Icon.* t. 413.—*Cylindrosorus* Benth. *Hueg. Enum.* 62.—*Phyllocalymna* Benth. *Hueg. Enum.* 61.—*Pogonolepis* Steetz, *Pl. Preiss.* i. 440.—*Epitriche* Turcz. *Bull. Mosc.* (1851), ii. 74.—*Gamozygis* Turcz. *loc. cit.* 75, t. 1.—*Dithyrostegia* A. Gray, *Hook. Kew Journ.* iii. 100.—*Hyalochlamys* A. Gray, *loc. cit.* 101.—*Cephalosorus* A. Gray, *loc. cit.* 152.—*Piptostemma* Turcz. in *Bull. Mosc.* (1851), i. 191.—*Pleuropappus* F. Muell. *Trans. Vict. Inst.* (1855), 37: common receptacle broad or narrow; bracts of common involucre various, few or 0; capitel 1-few-flowered, 2-few-bracteate; pappus paleaceous or 0.

[2] Spec. about 56. Labill. *Voy.* t. 16; *Pl. N.-Holl.* ii. 123 (*Richea*).—Ad. Br. *Duperr. Voy. Coq. Bot.* t. 60 (*Calocephalus*).—Hook. f. *Handb. N.-Zeal. Fl.* 144.—Benth. *Fl. austral.* iii. 557 (*Myriocephalus*), 560 (*Angianthus*), 569 (*Gnephosis*), 573 (*Calocephalus*), 578.

[3] *Pl. Preiss.* i. 444.—B. H. *Gen.* ii. 322, n. 252.—*Chamæsphærion* A. Gray, *Hook. Kew Journ.* iii. 176.—*Gyrostephium* Turcz. *Bull. Mosc.* (1851), ii. 76.—*Lachnothalamus* F. Muell. *Fragm.* iii. 156.

[4] Spec. 2. Benth. *Fl. austral.* iii. 581.

199. **Eriosphæra** Less.[1]—Flowers[2] hermaphrodite fertile, 1-morphous; corolla tubular, 5-dentate. Anthers minutely caudate at base. Style branches truncately capitate at apex. Fruit unequally oblong glabrous minutely granular; pappus hairs few unequal, very thin at base, thickened towards apex and there unequally glanularly moniliform.[3]—A dwarf annual, with many low stems, everywhere white-webbed; leaves alternate entire; capitules terminal in a contracted subglobular cyme; involucral bracts of cyme foliaceous obtuse loosely imbricate; bracts of separate involucres of each capitule inappendiculate elongate rather acute, imbricate and woolly, sometimes transparent at apex and margins; single receptacles narrow and bare. (*C. of Good Hope.*[4])

200. **Cæsulia** Roxb.[5]—Flowers hermaphrodite fertile, 1-morphous; limb of tubular corolla narrow-campanulate, 5-fid. Anthers setaceous-ramose appendiculate. Style branches obtuse at dilated compressed apex. Fruit subterete or slightly compressed without pappus.—A glabrous (marshy) herb; leaves alternate unequally serrulate; capitules compound sessile, axillar to dilated base of leaf, bracts few unequal foliaceous involucrate; heads ∞, 1-flowered; involucels consisting of 2 opposite bracts; bracts later closely surrounding ovarium and fruit at base,[6] and there at back carinate or longitudinally alate, free or more or less patulous above.[7] (*E. India.*[8])

201. **Stœbe** L.[9]—Flowers in heads solitary, hermaphrodite fertile, or rarely female, 1-morphous; limb of regular tubular corolla not or scarcely expanded, 5-fid; or 2-nate (*Disparago*[10]); one hermaphrodite fertile; the other female and sterile; limb of ligulate corolla entire or dentate. Anthers with short or rather long caudate appendage at base. Style branches truncate or

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[1] *Syn.* 270 (not DC.).—B. H. *Gen.* ii. 321; n. 250.

[2] Yellowish.

[3] With subcrystalline granules.

[4] Spec. 1 (seen by us in herb. Pourret, very similarly described by Thunberg), scil. *E. Oculus-Cati* Less.—Harv. *Thes. cap.* t. 149.—Harv. and Sond. *Fl. cap.* iii. 264.—*Gnaphalium Oculus-Cati* L. *Suppl.* 364.—*G. Oculus* Thunb. *Fl. cap.* 657. (*E. Oculus-Cati* DC. is (ex Sond.) *Helichrysum marifolium*, DC.)

[5] *Pl. coromand.* i. 64, t. 93; *Fl. ind.* iii. 447. —Cass. *Dict.* vi. Suppl. 4.—DC. *Prodr.* v. 482. —Endl. *Gen.* n. 2438.—B. H. *Gen.* ii. 318, n. 243.

[6] And sporting with the receptacle of the flower, but quite free from the ovary.

[7] A genus evidently anomalous in the order.

[8] Spec. 1. *C. axillaris* Roxb.—Andr. *Bot. Repos.* t. 431.—Wight, *Icon.* t. 1102.—*Meyera orientalis* Don, *Prodr. Fl. nepal.* 180.—*Melananthera orientalis* Spreng. (ex DC.).

[9] *Gen.* n. 1001.—Less. *Syn.* 345.—DC. *Prodr.* vi. 259.—Endl. *Gen.* n. 2760.—B. H. *Gen.* ii. 323, 1233, n. 254.

[10] Gærtn. *Fruct.* ii. 463, t. 173.—Cass. *Dict.* xiii. 348.—DC. *Prodr.* vi. 257.—B. H. *Gen.* ii. 828, n. 255.—*Wigandia* Neck. *Elem.* i. 95.—Less. *Syn.* 362 (not K.): capitules sometimes (sect. *Disparella* DC.) 1-florous.

penicillate at dilated slightly compressed apex. Fruit oblong, subterete or costate; pappus hairs 5–10, 1-seriate plumose, connate or free at base, sometimes 0 (*Perotriche*[1]). A rigid shrublet, glabrous or tomentose; leaves alternate (ericoid) rigid, twisted or fasciculate; heads arranged in a compound oftener globular capitule or subspicate on branches (*Seriphium*[2]); bracts of oblong involucre of heads few unequal, imbricate; receptacle narrow, bare. (*South Africa, Borbonia.*[3])

202. **Relhania** Lher.[4]—Flowers[5] 1–2-morphous, hermaphrodite fertile, or some occasionally sterile; all corollas regular tubular, 5-fid or 5-dentate, or in radial flowers ligulate, entire or dentate, open, sometimes short. Anthers with simple or branched setaceous appendage at base. Style branches thin, obtuse or truncate at apex. Fruit elongate or oblong, smooth compressed or angular; pappus hairs various or pales free, deciduous, or connate in a cupule, sometimes 0.—Shrubs or more rarely herbs (often ericoid), sometimes glutinous; leaves alternate or more rarely opposite, small or narrow, rigid, concave, or ∞-nerved; capitules terminal, solitary or in a contracted or expanded, corymbiform or umbelliform cyme; bracts of ovoid, oblong, cylindrical or sub-campanulate involucre ∞, imbricate, unequal; the inner often scarious or coloured; receptacles flat bare, foveolate, or fringed between the flowers, setose, or shorter or longer paleaceous.[6] (*South Africa.*[7])

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[1] Cass. *Bull. Soc. philom.* (1818), 75; *Dict.* xxxviii. 525.—Less. *Syn.* 353.—DC. *Prodr.* vi. 264.—Endl. *Gen.* n. 2762.—B. H. *Gen.* ii. 322, n. 253.—*Gymnachæna* Reichb. *Sieb. exs cap.* n. 23; capitules 1-florous.

[2] L. *Gen.* n. 1003.—Less. *Syn.* 349.—DC. *Prodr.* vi. 261.—Endl. *Gen.* n. 2761.

[3] Spec. 25, 26. Thunb. *Fl. cap.* 725.—Lamk, *Ill.* t. 722.—Harv. and Sond. *Fl. cap.* iii. 277 (*Disparago*), 279; 285 (*Perotriche*).

[4] *Sert. angl.* (1788), 22, t. 29 (not Gmel.).—Less. *Syn.* 374.—DC. *Prodr.* vi. 286.—Endl. *Gen.* n. 2781.—B. H. *Gen.* ii. 326, n. 265.—*Eclopes* Gærtn. *Fruct.* ii. 440, t. 169.—Lamk, *Ill.* t. 689.—Less. *Syn.* 378.—DC. *Prodr.* vi. 287.—Endl. *Gen.* n. 2782.—*Michauxia* Neck. *Elem.* i. 12.—*Rhynchocarpus* Less. *Syn.* 382.—*Rhynchopsidium* DC. *Prodr.* vi. 290; *Pl. rar. Jard. Gen.* vii. t. 6.

[5] Yellow or pink (?).

[6] Sections of the genus are:

Metalasia R. Br. *Trans. Linn. Soc.* xii. 124 (1816).—Less. *Syn.* 334.—Endl. *Gen.* n. 2753.—B. H. *Gen.* ii. 325, n. 260.—*Endoleuca* Cass. in *Dict.* xiv. 474.—*Erythropogon* DC. *Prodr.* vi. 254: flowers 1-morphous few or ∞ in capitule; involucre cylindrical or obconical; bracts often laminately (coloured) appendiculate; fruit smooth; pappus hairs not or slightly dilated at apex.

Nestlera Spreng, *Syst.* iii. 302 (1826).—Less. *Syn.* 372.—DC. *Prodr.* vi. 283.—Endl. *Gen.* n. 2779.—B. H. *Gen.* ii. 825, n. 262.—*Columellea* Jacq. *Hort. schœnbr.* iii. 28, t. 301.—*Stephanopappus* Less. in *Linnæa*, vi. 234.—*Polychæta* Less. *Syn.* 371.—DC. *Prodr.* vi. 285.—Endl. *Gen.* n. 2780 (part.): capitules radiating, few-∞-flowered; bracts of subcampanulate or ovoid involucre sometimes obtuse; pappus hairs short, paleaceous or connate in a cupule.

[7] Spec. about 45. Lamk, *Ill.* t. 693, fig. 3 (*Xeranthemum*).—*Bot. Reg.* t. 587.—Harv. and Sond. *Fl. cap.* iii. 265 (*Metalasia*), 295 (*Nestlera*), 298.

203 ? **Elythropappus** Cass.[1]—Flowers in capitule 3-∞, 1-morphous or more rarely (*Amphigossa*,[2] *Bryomerphe*[3]) 2-morphous; the radial ligulate generally small or minute. Fruit oblong, subterete or thinly costate; pappus hairs free or connate in a ring at base, scabrous or longer or shorter plumose. Other characters of *Stœbe*.[4] A glabrous scabrous or tomentose shrublet; branches often spinescent, or sometimes a dwarf perennial herb densely pulvinately cæspitose; leaves alternate rigid (often ericoid), sometimes imbricate or fasciculate; capitules terminal solitary or oftener glomerate, or axillar and sessile; bracts of various involucre rigid, imbricate; receptacle small bare.[5] (*South Africa*.[6])

204 ? **Lachnospermum** W.[7]—Flowers[8] 1-morphous regular hermaphrodite fertile &c. of *Stœbe*.[9] Fruit oblong, rather prominently 4-angled and there ciliately villose, generally flattened at back; pappus hairs ∞, sub-2-seriately imbricate, scabrous, free or connate quite at base.—A hoary tomentose shrub; leaves alternate thick (shortly ericoid) sometimes fasciculate and contorted; capitules[10] terminal, solitary or 2–3-nate; bracts of subcampanulate involucre ∞, imbricate, ∞-seriate, rigid mucronate; the outer gradually smaller; receptacle flat and paleaceous or setiferous between outer flowers. (*South Africa*.[11])

205. **Syncephalum** D.C.[12]—Flowers[13] hermaphrodite fertile, in single involucel few (2, 3); lobes of regular tubular corolla 5, glandular to apex. Anthers narrowly caudate at base. Branches of thin style shorter connate. Fruit oblong subpyramidal glabrous without pappus. A glabrous undershrub; leaves alternate, suboval sessile coriaceous, entire or subcrenulate, imbricate; heads in

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[1] *Bull. Soc. philom.* (1816), 199; *Dict.* xiv. 376.—Less. *Syn.* 342.—DC. *Prodr.* vi. 256.—Endl. *Gen.* n. 2757.—B. H. *Gen.* ii. 323, n. 256.—*Achyrocome* Schr. *D. Ak. Wiss. Munch.* viii. 147, 170 (ex DC.).—*Cyathopappus* Sch. bip. *Pollichia* (1861), 183.

[2] DC. *Prodr.* vi. 258, b. c.—Endl. *Gen.* n. 2759.—B. H. *Gen.* ii. 324, n. 258.

[3] Harv. *Thes. cap.* t. 151.—B. H. *Gen.* ii. 324, n. 258.

[4] Of which perhaps a sect. (?).

[5] Sect. 3: 1. *Amphiglossa*, flowers 2-morphous; leaves ericoid; 2. *Euelythropappus*, flowers 1-morphous; leaves ericoid; capitules often axillar; 3. *Bryomorphe*, stem cæspitose-pulvinate (a mountain plant); flowers 2-morphous; pappus hairs scabrous (not plumose).

[6] Spec. about 12. Harv. and Sond. *Fl. cap.* iii. 273; 275 (*Pterothrix*), 277 (*Bryomorphe*).

[7] *Spec.* iii. 1787.—Less. *Syn.* 342.—DC. *Prodr.* vi. 255.—Endl. *Gen.* n. 2755.—B. H. *Gen.* ii. 325, n. 261.—*Carpholoma* Don, in *Mem. Wern. Soc.* v. 555.

[8] Pink (?)

[9] Of which perhaps rather a sect. (?).

[10] Rather large or moderate.

[11] Spec. 1. *L. fasciculatum.*—*L. ericoides* W. —Harv. and Sond. *Fl. cap.* iii. 272.—*Stœhelina fasciculata* Thunb. *Fl. cap.* 628.—*Serratula fasciculata* Poir. *Dict.* vi. 560, n. 35.—*Carpholoma rigidum* Don.

[12] *Prodr.* vi. 282.—Endl. *Gen.* n. 2777.—B. H. *Gen.* ii. 326, n. 264.

[13] Saffron coloured (?).

a compound corymbose-cymose and terminal capitule; bracts leaf-like approximated in a common involucre; bracts of single involucel few unequal; some membranous or transparently scarious, imbricate.[1] (*Madagascar.*[2])

206? **Rosenia** THUNB.[3]—"Flowers fertile, 2-morphous; the radial female, 1-seriate; the discal hermaphrodite; corolla of females ligulate open; of hermaphrodite tubular, 5-dentate. Anthers long-caudately appendiculate at base. Style branches of hermaphrodite flowers narrow truncate. Fruit not rostrate; the radial prismatic, 3-quetrous, callose-angled; pappus hairs ∞, short subequal; the discal cylindrical sulcate, rugulose beneath; pappus 2-plex; the outer ∞-paleaceous short, the inner long 2-aristate. A many-branched glabrous shrub; leaves decussate small coriaceous, white tomentose above; margins inflexed; capitules terminal solitary or subsessile on very short lateral twigs." (*South Africa.*[4])

207? **Anaglypha** D.C.[5]—"Flowers[6] all fertile, 2-morphous; the radial female, 1-seriate; blade of ligulate corolla open, 3-dentate; the discal hermaphrodite; limb of regular tubular corolla 5-fid. Anthers setaceous caudate at base; auricles contiguous. Style branches of hermaphrodite flowers truncate. Fruit (immature) subterete glabrous, 5-costate, without pappus.—A virgate shrub, rigidly pilose; leaves alternate congested linear mucronate, carinate at back; capitules terminal solitary pedunculate; receptacle flat bare; bracts of broadly campanulate involucre few-seriate, imbricate; the outer subulate; the inner longer and broader lanceolate, scarious at margin and rather hispid at back." (*South Africa.*[7])

208. **Filago** T.[8]—Flowers[9] 2-morphous; the outer female, 1-∞-seriate fertile; corolla thin or filiform, subentire or minutely 2–3-dentate; the inner hermaphrodite, fertile or part or all sterile;

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[1] Habit of *Relhania*, to which it is very near.

[2] Spec. 1. *S. Bojeri* DC.

[3] *Fl. cap. Præf.*; *Fl. cap.* 692.—LESS. *Syn.* 369.—DC. *Prodr.* vi. 280.—B. H. *Gen.* ii. 327, 1233, n. 266.

[4] Spec. 1, unknown to us (*Relhania*, apparently very near to), *R. glandulosa* THUNB.—HARV. and SOND. *Fl. cap.* iii. 294.

[5] *Prodr.* v. 311.—ENDL. *Gen.* n. 2359.—B. H. *Gen.* ii. 326, n. 263.—*Oxylæna* BENTH. *Hook. Icon.* t. 1109.

[6] "Yellowish."

[7] Spec. 1, 2. H. and SOND. *Fl. cap.* iii. 68.

[8] *Inst.* 454 (part.), t. 259.—L. *Spec.* 1311 (part.).—ADANS. *Fam. des pl.* ii. 122.—J. *Gen.* 179.—DC. *Prodr.* vi. 247.—ENDL. *Gen.* n. 2752.—B. H. *Gen.* ii. 299, n. 19.—*Logfia* CASS. *Bull. Soc. philom.* (1819), 143; *Dict.* xxvii. 116.—*Oglifa* CASS. *Dict.* xxxv. 448.—*Achariterium* BL. et FINGERH. *Fl. germ.* ii. 345.—*Impia* BL. et FINGERH. *loc. cit.* ii. 342.—*Xerotium* BL. et FINGERH. *loc. cit.* ii. 343.

[9] Dull or pale yellow.

3-dentate; one tooth longer; the discal hermaphrodite fertile few; limb of tubular corolla 4-dentate. Anthers subtruncate at apex, at base . . . ? Style lobes of hermaphrodite flowers . . . ? Fruit terete stipitate smooth, covered with long hairs horizontally involute at apex, and crowned at apex with straight hairs resembling *a very short pappus.*—A very small erect[1] branching annual; *leaves alternate 1–3-dentate* below apex, linear glabrous; capitules (small) sessile on dichotomous stems, 2–4 closely glomerate; involucral bracts equal acute membranous, sub-1-seriate; receptacle bare around central flowers, around outer loaded with complicated pales."[2] (*Amoor reg.*[3])

210. **Blepharispermum** WIGHT.[4]—Flowers 2-morphous; the outer female few fertile; corolla slender tubular, 2–4-dentate; the inner few (2–10) hermaphrodite fertile; limb of tubular corolla more or less expanded, 5-dentate. Anthers caudately acuminate at base. Style branches of hermaphrodite flowers rather thick obtuse, papillose at back. Fruit[5] fertile compressed; with angular margins on both sides or narrowly alate ciliate; and a few stronger hairs at apex form a spurious pappus.—Glabrous shrubs or under shrubs; leaves alternate, broad ovate-lanceolate, entire or subdentate; capitules (small) numerous in terminal globes (compound capitule) solitary or few; single receptacle cylindrical shortly branch-like; single flowers surrounded by paleaceous dry or scarious imbricate bracts. (*E. India.*[6])

211. **Cylindrocline** CASS.[7]—Flowers[8] polygamous, 2-morphous; the lower female ∞, fertile; corolla slender-tubular, minutely few-dentate; the upper hermaphrodite sterile (?); limb of tubular corolla slightly expanded, 5-dentate. Anthers caudately acuminate at base. Style branches of hermaphrodite flowers rather obtuse; of female flowers narrower. Fruit elongate; the outer compressed or 3-gonal, fertile; the inner thinner (generally vacuous), 8–10-costate; pappus hairs few (4–12), bare or shortly barbellate,

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[1] Habit of *Myriogyne.*

[2] ? Rather a sect. *Filago.*

[3] Spec. 1. *S. exilis* MAXIM.

[4] Ex DC. *Wight Contr. Bot. ind.* 11; *Prodr.* v. 368.—ENDL. *Gen.* n. 2393.—B. H. *Gen.* ii. 295, n. 187.—*Leucoblepharis* ARN. *Mag. Zool. et Bot.* ii. 422.

[5] Turning black at maturity.

[6] Spec. 3. DELESS. *Ic. sel.* iv. t. 19.—WIGHT, *Icon.* t. 1092, 1093.

[7] *Bull. Soc. philom.* (1817), 11; *Dict.* xii. 318.—LESS. *Syn.* 207.—DC. *Prodr.* v. 458.—ENDL. *Gen.* n. 2419.—B. H. *Gen.* ii. 295, n. 186.—*Lepidopogon* TAUSCH. *Flora* (1829), i. *Erganzbl.* 37; (1831), 224.

[8] "Bluish."

rather compressed and somewhat dilated at base and quite at base connate in a very short cupule.—A densely sericeous-tomentose shrub; leaves alternate, crowded at ends of twigs, sublanceolate thick entire soft; capitules elongate in terminal stipitate corymbiform cymes, receptacle branchlike; involucral bracts imbricate, ∞-seriate; the lower shorter; the inner narrower and perceptibly passing into pales surrounding the single axillar flowers. (*Mauritius.*[1])

212. **Athroisma** D.C.[2]—Flowers oftener 2-morphous, all fertile; the outer few (or 0) female; corolla filiform, 2–3-dentate; the discal ∞, hermaphrodite; limb of tubular corolla narrowly campanulate, 4-dentate. Anthers minutely auriculate at base. Style branches of hermaphrodite flowers generally deeply connate obtuse. Fruit[3] nearly flat on face and back, ciliate at margin, more densely crowned at apex with ciliate hairs collected in a short pappus.—A spreading branched herb, glabrous or loosely lanate above, viscid; leaves alternate petiolate incised pinnatifid; capitules small ∞, sessile on a common cylindrical branchlike receptacle; common capitule hence densely spikelike; single heads 1–2-bracteate; single receptacle cylindrical bearing between the flowers imbricate dry subscarious pales longer than the contained flower. (*E. India, Java.*[4])

213. **Tarchonanthus** L.[5]—Flowers polygamo-diœcious; corolla tubular regular, in female flower shorter and equal, 3–5-dentate at apex; in hermaphrodite or submale shortly expanded above and 5-fid. Anthers (in female flower rudimentary or 0) long caudately acuminate at base. Lobes of rather thick (sometimes subentire) style short, sometimes open. Fruit ovoid, densely lanate, without pappus.—Small trees, tomentose or partly glabrous; leaves alternate, entire or 3–5-lobed at apex, thick; capitules in terminal compound or simpler and cymiferous axillar racemes; receptacle small bare; bracts of campanulate involucre few herba-

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[1] Spec. 1. *C. Commersonii* Cass.—Bak. *Fl. maur.* 165.—*Conyza hirsuta* Commers. herb.—*Lepidopogon Poniæ* Tausch.—*L. gnaphalodes* Tausch.

[2] *Guillem. Arch. bot.* ii. 516; *Prodr.* v. 368.—Endl. *Gen.* n. 2394.—B. H. *Gen.* ii. 296, n. 188.

[3] Becoming black when mature.

[4] Spec. 1. *A. laciniatum* DC.—*A. viscidum* Zoll.—*Sphæranthus laciniatus* Wall. *Cat.* n. 3184.

[5] *Gen.* n. 940 (not Vaill.).—Gærtn. *Fruct.* ii. 392.—Lamk, *Ill.* t. 671.—Cass. *Dict.* lii. 245.—Less. *Syn.* 208.—DC. *Prodr.* v. 431.—Endl. *Gen.* n. 2412.—B. H. *Gen.* ii. 288, n. 169.

ceous or subcoriaceous, sometimes very shortly ciliate, 1–2-seriate, free, on the inner more or less connate. (*South Africa.*[1])

214. **Brachylæna** R. Br.[2]—Flowers polygamo-diœcious (nearly of *Tarchonanthus*); corollas of female flowers very thin, 3–5-dentate or 3–5-fid at apex; limb of hermaphrodite flowers thinly subcampanulate, long 5-fid. Anthers (in female flowers rudimentary or 0) thinly caudately acuminate at base; auricles connate. Style entire at apex, or very shortly 2-lobed and obtuse. Fruit glabrous or pilosulous, 4–5-angled; pappus hairs 1–2-seriate, scabrous or barbellate; hairs of abortive fruit fewer shorter.—Small trees or shrubs, glabrous or sparsely tomentose; leaves alternate, entire or sparsely dentate, glabrous nitid above; capitules in terminal or axillar more or less branched and cymiferous racemes; bracts of campanulate, obconical or ovoid involucre few-seriate, imbricate, obtuse coriaceous; the latter often gradually smaller; receptacle small, slightly convex bare. (*South Africa.*[3])

215. **Synchodendron** Boj.[4]—Flowers (nearly of *Brachylæna*) diœcious; corolla of males tubular; limb slightly expanded, 5-dentate; of females thin, dilated at base, very narrow at apex, very shortly 4–5-dentate. Anthers (in female flowers 0) long caudately acuminate at base. Lobes of style (in female flower thinner exserted) very short obtuse. Fruit oblong, granulately ceracious externally; pappus hairs ∞, very thin (in abortive fruit smaller and fewer).—Tall trees; wood hard; leaves alternate, petiolate entire penninerved, canescent or ferruginous tomentose beneath; capitules[5] axilar in wood or lateral cymose, few, shortly or rather long stipitate; receptacle small, nearly flat bare; bracts of obconical involucre, ∞, rigid, imbricate, ∞-seriate; the outer gradually shorter and more obtuse.[6] (*Madagascar.*[7])

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[1] Spec. 3. Harv. and Sond. *Fl. cap.* iii. 117.

[2] *Trans. Linn. Soc.* xii. 115.—Less. *Syn.* 208.—DC. *Prodr.* v. 429.—Endl. *Gen.* n. 2411.—B. H. *Gen.* ii. 288, n. 168.—*Oligocarpha* Cass. *Bull. Soc. philom.* (1817); *Dict. sc. nat.* xxxvi. 21.

[3] Spec. 6. Thunb. *Fl. cap.* 638 (*Tarchonanthus*).—Harv. and Sond. *Fl. cap.* iii. 116.

[4] Ex DC. *Prodr.* v. 92.—Endl *Gen.* n. 2288.—B. H. *Gen.* ii. 288, n. 167.—H. Bn. *Bull. Soc. Linn. Par.* 278.

[5] Small or moderate.

[6] A genus in habit involucre, &c., not unlike the Vernoniæ, among which it was enumerated (DC.), but the flowers quite of the *Tarconantheæ.*

[7] Spec. about 2.

216? **Placus** Lour.[1]—Flowers[2] 2-morphous; the outer female 1–∞-seriate, fertile; corolla filiform and often shorter than style, unequally 2–5-dentate or fid, more rarely ligulate; blade rather large or small, sparsely dentate and open; the discal hermaphrodite few or ∞, fertile or partly sterile; corolla tubular regular, slightly expanded above, 5-dentate. Anthers sagittate at base, auricles longer or shorter, or sometimes scarcely acuminate-caudate, contiguous, coherent, or free, either entire or more rarely subciliate. Style branches filiform or flattened, obtuse or rather acute at apex, papillose or hirsute at back, sometimes but rarely very short or connate. Fruit subterete or variously pilose, smooth or 4–10-angled or costate; pappus hairs ∞, thin, or rather rigid, glabrous, scabrous, or more rarely serrulate, generally caducous; the outer sometimes few shorter.[3]—Annual or perennial herbs, undershrubs or shrubs; clothing various, sometimes lanate; leaves alternate, entire, dentate, lobed or pinnatifid; capitules terminal or more rarely axillar, rarely sessile, solitary or in corymbiform or racemiform or loose cymes or glomerules; receptacle flat above and bare; involucre ovoid, hemispherical, or oftener subcampanulate, bracts ∞, few- or many-seriately imbricate, often acute or narrow; the outer gradually smaller. (*All warm reg.*[1])

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[1] *Fl. cochinch.* 496.—DC. *Prodr.* v. 453; vii. 261.—H. Bn. *Bull. Soc. Linn. Par.* 282.—*Pluchea* Cass. *Bull. Soc. philom.* (1817), 31; *Dict. sc. nat.* xlii. 1.—DC. *Prodr.* v. 450.—Endl. *Gen.* n. 2414.—B. H. *Gen.* ii. 290, 1233, n. 173.—*Leptogyne* Ell. *Bot. S.-Carol. and Georg.* (1821–1824), ii. 322.—*Gymnema* Rafin. —*Stylimnus* Rafin. *Journ. Phys.* 100; *Ann. nat.* 15 (ex DC.).—*Conyza* Sch. bip. *Walp. Rep.* ii. 353 (part.).—*Karelinia* Less. *DC. Prodr.* v. 375.—*Berthelotia* DC. *loc. cit.*—Deless. *Ic. sel.* iv. t. 21.—*Eyrea* F. Muell. *Linnæa*, xxv. 403. —*Spiropodium* F. Muell. *Fragm.* i. 33.—*Blumea* DC. *Guillem. Arch. bot.* ii. 514; *Prodr.* v. 432. —Endl. *Gen.* n. 2413.—B. H. *Gen.* ii. 289, n. 171.—? *Dœllia* Sch. bip. *Walp. Rep.* ii. 953.

[2] Pink, purplish, white, lilac, violet or more rarely yellowish.

[3] A genus very closely allied to *Conyza* (sect. of *Erigeron*), differing chiefly (not constantly) in the anthers being longer or thinly caudate and in the form (variable) of the fruit, and closely connects a sect. of the *Plucheineæ* of authors with the *Euastereæ*. We make sections of the genus, sometimes not clearly defined:

Laggera Sch. bip. *Walp. Rep.* ii. 953.—B. H. *Gen.* ii. 290, n. 172: anthers scarcely or not caudate at base (sect. hence very near *Erigeron*); female corollas very thin; involucral bracts narrow or lanceolate, oftener rather rigid; capitules sessile to uppermost axils or in racemiform cymes; stem herbaceous, perennial or sometimes shrubby at base. (*Asia and trop. Africa.*)

Stenachænium Benth. *Gen.* ii. 289, n. 170: fruit rather long; pappus hairs ∞, rather rigid; capitules stipitate or closely cymose; stem perennial. (*Brazil.*)

Sachsia Griseb. *Cat. pl. cub.* 150.—B. H. *Gen.* ii. 291, n. 174: limb of filiform female corolla 2–3-dentate; stem perennial; leaves basal rosulate; capitules loosely and remotely cymose. (*Cuba.*)

? *Rhodogeron* Griseb. *loc. cit.* 151.—B. H. *Gen.* ii. 291, n. 175: limb of ligulate female corolla ovate erect minutely dentate (which we sometimes see in *Sachsia*; ? sections hence to be united in one ?). (*Cuba.*)

Pterigeron DC. *Prodr.* v. 293 (sect of *Erigeron.*).—A. Gray *Pl. Wright.* i. 90, not.—B. H. *Gen.* ii. 292, n. 177.—*Streptoglossa* Steetz, ex F. Muell. *Trans. Bot. Soc. Edinb.* vii. 491: female corolla ligulate or unequally ampliate; stem herbaceous, oftener rather rigid; capitules solitary or cymose; leaves alternate, sometimes decurrent, entire or dentate. (*Trop. and subtrop. Australia.*)

? *Tecmarsis* DC. *Prodr.* v. 93.—Endl. *Gen.* n. 2240, "a very uncertain genus (B. H. *Gen.* ii. 291) based on specimens from Madagascar with capitules not in flower, which appear to us not unlike *Pluchea*." The form of the leaves, however, appears different and adult specimens are desirable.

217. **Tessaria** R. and Pav.[2]—Flowers[3] (nearly of *Placus*[4]) 2-morphous; the outer female fertile, ∞-seriate; corolla filiform and shorter than style, minutely dentate or unequally 3–4-fid; the discal few or 1, hermaphrodite sterile; corolla tubular, 5-dentate. Anthers caudate-acuminate at base. Style of hermaphrodite flowers sometimes undivided; branches subulate. Fruit 4–5-angular, sometimes rather compressed; pappus hairs ∞, thin, 1-seriate.—Sericeous or pubescent shrubs; leaves alternate, entire or dentate, sessile or petiolate, sometimes subunequal, attenuated at base, acute or obtuse at apex; capitules in terminal or compound or simple racemose corymbiform cymes; receptacle flat bare; bracts of ovoid involucre ∞, imbricate scarious; the outer gradually smaller. (*Extra trop. or mount. west N. and S. America.*[5])

218. **Epaltes** Cass.[6])—Flowers[7] polygamous or subdiœcious; the radial female fertile; corolla very thin, shorter than style, 2–3-dentate or sub-2-labiate at apex, sometimes hardened at base; the discal few hermaphrodite, generally sterile; limb of tubular corolla narrowly campanulate, 3–5-dentate or -fid. Anthers minutely caudate-acuminate at base. Style of hermaphrodite

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[1] Spec. about 110 (enumer. about 160). Jacq. *Ic. rar.* t. 585 (*Conyza*).—Jacq. f. *Eclog.* t. 133.—Wight, *Icon.* t. 1099–1101 (*Blumea*); *Ill.* t. 131 (*Pluchea*).—Deless. *Ic. sel.* t. 23–25 (*Blumea*).—Hook. *Icon.* t. 1156, 1157 (*Pluchea*).—Seem. *Fl. vit.* t. 27 (*Blumea*).—A. Rich. *Fl. abyss. Tent.* t. 62 (*Serratula*).—Kurz, *For. Fl. brit. Burm.* ii. 82 (*Blumea*), 83 (*Pluchea*).—A. Gray, *Man.* (ed. 1856), 208 (*Pluchea*).—Chapm. *Fl. S. Unit. St.* 218 (*Pluchea*).—Griseb. *Fl. brit. W.-Ind.* 366 (*Pluchea*); *Symb. Fl. argent.* 183 (*Pluchea*).—Miq. *Fl. ind.-bat.* ii. 40 (*Conyza*).—Benth. *Fl. austral.* iii. 524 (*Blumea*), 527 (*Pluchea*), 531 (*Pterigeron*).—Harv. and Sond. *Fl. cap.* iii. 119 (*Blumea*).—Oliv. and Hiern, *Fl. trop. Afr.* iii. 322 (*Blumea*), 323 (*Laggera*), 327 (*Pluchea*).—Klatt, *Ann. sc. nat.* sér. 5, xviii. 368 (*Blumea, Pluchea*).—Bak. *Fl. maur.* 164 (*Blumea*).—Boiss. *Diagn. or.* ser. 2, iii. 5; *Fl. or.* iii. 216 (*Conyza*).—Walp. *Rep.* ii. 972 (*Conyza*); vi. 133 (*Conyza*), 188 (*Blumea, Pluchea*); *Ann.* i. 410 (*Blumea*); ii. 834 (*Conyza*), 839 (*Blumea*); v. 195 (*Conyza*), 198 (*Blumea*).

[2] *Prodr. Fl. per.* 112, t. 24.—Cass. *Dict.* liii. 233.—DC. *Prodr.* v. 456.—Endl. *Gen.* n. 2417.—B. H. *Gen.* ii. 291, n. 176.—*Gynheteria* W. *Ges. Naturfr. Berl. Mag.* (1807), 140.—*Gyneteria* Spreng. *N. Entd.* ii. 135, t. 1.—*Phalacromesus* Cass. *Dict.* liii. 235.—*Polypappus* Nutt. *Journ. Acad. Philad.* ser. 2, i. 178 (not Less.).

[3] Pink or purplish.

[4] From which the genus scarcely differs in habit (very various), involucre, leaves and clothing.

[5] Spec. about 5. Ad. Br. *Duperr. Voy. Coq. Bot.* t. 64.—Torr. *Sitgr. Exp.* t. 5.—Remy, *C. Gay Fl. chil.* iv. 105.—Walp. *Ann.* v. 198.

[6] *Bull. Soc. philom.* (1818), 139; *Dict.* xv. 6.—Less. *Syn.* 206.—DC. *Prodr.* v. 461.—Endl. *Gen.* n. 2422.—B. H. *Gen.* ii. 293, n. 182.—*Ethuliopsis* F. Muell. *Fragm.* ii. 154; *Pl. Vict.* t. 38.—*Gynaphanes* Steetz, *Pet. Moss. Bot.* 457.—*Pachytelia* Steetz, *loc. cit.* 453.—*Litogyne* Harv. *Thes. cap.* t. 155; *Fl. cap.* iii. 48.

[7] Whitish or purplish.

flowers entire, often papillose, sometimes shortly 2-fid. Radial fruit subterete, 5–10-costate, without pappus; the discal thin, oftener effete; pappus hairs very few (1–3) or 0.—Herbs,[1] leaves alternate, entire, dentate or sublyrate, often decurrent at base; capitules sessile or oftener in corymbiform cymes; involucral bracts ∞, imbricate, dry rather stiff, ∞-seriate; receptacle flat or ovoid above, and sometimes concave in the middle, bare or alveolate. (*Warm Asia, Africa, Australia, and America.*[2])

219. **Denekia** THUNB.[3]—Flowers[4] nearly of *Epaltes*, 2-morphous; the outer female fertile ∞, corolla shorter than style and openly 2-lobed (sub-2-labiate) at apex; the discal hermaphrodite sterile; corolla tubular or narrowly campanulate, 5-lobed. Anthers minutely caudate at base. Style branches of hermaphrodite flowers short, long ovate obtuse, papillose without and compressed at back. Radial fruit subterete, without pappus; the discal thin effete; pappus hairs very few (1, 2) elongate and pennicillately plumose.—Slender herbs; stem branched or subsimple; leaves alternate, entire or dentate, sometimes hoary beneath; capitules in corymbiform, sometimes very contracted cymes at ends of twigs; receptacle small flat bare; bracts of varying involucre sub-2-seriate, sometimes scarious at margin.[5] (*South and sub-trop. Africa.*[6])

220? **Thespidium** F. MUELL.[7]—"Flowers fertile, 2-morphous; the outer female, 1-seriate; corolla thin shorter than style, few dentate at apex; the discal hermaphrodite few fertile; limb of tubular corolla little expanded, 4-dentate. Anthers minutely caudate-acuminate at base. Style branches of hermaphrodite flowers subulate. Fruit subterete, 8-10-costate; pappus hairs few (5-12) subpaleaceous unequal, shorter in ray.—A low rigid branched herb; leaves alternate, entire, or dentate; capitules in glomerules axillar to lower leaves of branches; receptacle small bare; bracts of ovoid involucre dry rigid acute unequal imbricate." (*Trop. Australia.*[8])

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[1] Habit often of *Ethulia*.

[2] Spec. 8, 9. DC. *Prodr.* vi. 140, n. 1 (*Sphæromorphæa*).—MIQ. *Fl. ind.-bat.* ii. 61.—STEETZ, *loc. cit.* t. 49.—OLIV. and HIERN, *Fl. trop. Afr.* iii. 331.—KLATT. *Ann. sc. nat.* sér. 5 xviii. 370.

[3] *Prodr. Fl. cap. Præf.*; *Fl. cap.* 665.—CASS. *Dict. sc. nat.* xiii. 65.—LESS. *Syn.* 206.—DC. *Prodr.* v. 462.—B. H. *Gen.* ii. 293, n. 181.

[4] Whitish or yellow.

[5] Flowers rather of *Epalte* than of *Conysa*, the style of which the genus rather has.

[6] Spec. 2, 3. SPRENG. *Syst.* iii. 496 (*Selloa*).—HARV. and Sond. *Fl. cap.* iii. 118.—BENTH. *Hook. Icon.* t. 1188.

[7] *Benth. Fl. austral.* iii. 534; *Gen.* ii. 292, n. 178.

[8] Spec. 1, unknown to us, *T. basiflorum* F. MUELL.—BENTH. *Fl. austral.* iii. 534; *Hook. Icon.* t. 1143.—*Pluchea basiflora* F. MUELL. *Rep. Babb. Exped.* 12.

fusiform-elongate, sometimes obtuse at apex more or less papillose, more rarely filiform-2-branched. Fruit oblong subterete or slightly compressed, without pappus.—Erect divaricately branched herbs; leaves alternate decurrent, generally dentate; capitules compound terminal solitary; common receptacle globular, ovoid, oblong or depressed flat, often vacuous in centre, involucrate at base with oftener few bracts; heads (small) few flowered in common receptacle alternate sessile and the few bracts of the involucel narrow subpaleaceous imbricate few-seriate. (*Trop. Asia and Australia, trop. east. cont. and ins. Africa.*[1])

224. **Pterocaulon** Ell.[2]—Flowers[3] 2-morphous; the outer female hermaphrodite, fertile or partly sterile, ∞-seriate; corolla very thin shorter than style, 2–3-dentate or subentire; the discal few (sometimes 1, 2) hermaphrodite, sterile or sometimes fertile; corolla tubular or narrowly campanulate, 5-dentate. Anthers acuminate caudate at base. Styles of hermaphrodite flowers slender or very short rather obtuse. Fruit somewhat compressed or angular, 4–5-costate; pappus hairs thin, 1–2-seriate, in disk often fewer.—Herbs sometimes sub-shrubby at base, generally canescent; leaves alternate decurrent on stem and sometimes widely alate branches, entire or dentate; heads collected in a globular capitule or more rarely (*Bothryeis*[4]) interruptedly spicate; bracts of single subovate involucel imbricate dissimilar; the inner sometimes subpaleaceous. (*Trop. America, Asia and Oceania, east. trop. cont. and ins. Africa.*[5])

225. **Monarrhenus** Cass.[6]—Flowers[7] compound-capitate, 2-morphous; the outer heads female few-seriate; corolla very thin shorter than style, few-dentate or subentire at apex; the discal very few (1–3) hermaphrodite sterile or fertile; corolla tubular or narrowly funnel-shaped, 5-dentate. Anthers caudately acuminate at base. Style of hermaphrodite flowers entire or very shortly 2-lobed at apex. Fruit oblong; pappus hairs thin 1-seriate.—

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[1] Spec. 7, 8. L. *Spec.* 1314.—Lamk, *Ill.* t. 718.—Wight, *Icon.* t. 1149 (*Oligolepis*).—Boiss. *Fl. or.* iii. 215.—Harv. and Sond. *Fl. cap.* iii. 115.—Benth. *Fl. austral.* iii. 521.—Miq. *Fl. ind.-bat.* ii. 35.—Oliv. and Hiern, *Fl. trop Afr.* iii. 332.—Walp. *Ann.* i. 408.

[2] *Bot. S. Carol.* ii. 323 (1824).—Endl. *Gen.* n. 2415.—B. H. *Gen.* ii. 294, n. 184.—*Chænolobus* Cass. *Dict.* xlix. 337.—*Monenteles* Labill. *Sert. austro-caledon.* 42, t. 43, 44 (1825).—Endl. *Gen.* n. 2416.

[3] Yellowish or pale purplish.

[4] The type of which is *Monenteles Pterocaulon* DC.

[5] Spec. 12, 13. Cav. *Ic.* t. 12 (*Conyza*).—Benth. *Fl. austral.* iii. 522.

[6] *Bull. Soc. philom.* (1817), 44; *Dict.* xxxii 433.—DC. *Prodr.* v. 457.—Endl. *Gen.* n. 2418. B. H. *Gen.* ii. 295, n. 185.

[7] Yellowish.

Shrubs; leaves alternate, generally collected at ends of twigs, narrow, attenuated on both sides rigid costate, tomentose beneath; heads small collected in a common globular capitule; capitules corymbiform cymose terminal; bracts of subcampanulate or ovate involucels imbricate rather rigid dry; the outer gradually smaller. (*Mascarene Is.*[1])

VI. CALENDULEÆ.

226. **Calendula** L.—Flowers 2-morphous; the radial irregular female, 1–2-seriate, fertile; limb of ligulate corolla entire or 3-dentate open; the discal hermaphrodite sterile regular; limb of tubular corolla 5-dentate, valvate. Anthers syngenesious, auriculate setaceous-caudate or mucronate at base. Style girt at base with epigynous disk, conical or shortly 2-dentate at pappillose apex. Fruit more or less incurved polymorphous (the outer straighter), everywhere or at the back unequally muricate, sometimes partly variously alate or compressed at back; embryo of ascending seed fleshy.—Annual or perennial herbs, sometimes subshrubby at base, often glandularly puberulous; leaves alternate, entire, sinuate or dentate; capitules terminal pedunculate, solitary or loosely cymose; receptacle nearly flat bare; bracts of broadly diskshaped involucre imbricate, 1-2-seriate, narrow and often scarious at margin. (*Mid. Europe, Medit. reg., Levant, Canaries.*)—*See p.* 42.

227 ? **Dimorphotheca** Vaill.[2]—Flowers[3] nearly of *Calendula;* fruit straight; the radial generally 3-quetrous; the discal partly compressed or laterally alate.—Annual or perennial herbs, sometimes sub-shrubby; leaves alternate or basal; capitules terminal long pedunculate. Other characters of *Calendula*[4] (*South Africa.*[5])

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[1] Spec. 3. Lamk, *Dict.* ii. 89 (*Conyza*).—Pers. *Enchir.* ii. 428 (*Conyza*).—Bak. *Fl. maur.* 166. —Klatt, *Ann. sc. nat.* sér. 5, xviii. 370.

[2] *Act. Acad. par.* (1720), 279.—Mœnch, *Meth.* 585.—DC. *Prodr.* vi. 70.—Endl. *Gen.* n. 2672.—B. H. *Gen.* ii. 453, n. 597.—*Lestibodea* Neck. *Elem.* i. 40 (ex DC.).—*Gattenhoffia* Neck. *loc. cit.* 39.—*Meteorina* Cass. *Bull. Soc. philom.* (1818); *Dict.* xxx. 309.—*Acanthotheca* DC. *Prodr.* vi. 73.—Endl. *Gen.* n. 2673.—*Blaxium* Cass. *Dict. sc. nat.* xxx. 328.—*Arnoldia* Cass. *loc. cit.* 330 (ex DC.).—*Castalis* Cass. *loc. cit.* 332 (ex DC. *loc. cit.*)

[3] Yellow, violet, purplish, or fuscate; radial the same or whitish.

[4] Of which perhaps rather a sect. (?).

[5] Spec. about 20. Jacq. *Hort. schœnbr.* t. 253 (*Calendula*).—Vent. *Malm.* t. 20, 56 (*Calendula*). —Sweet, *Brit. fl. Gard.* t. 39 (*Calendula*).—Andr. *Bot. Repos.* t. 407, 412 (*Calendula*).—Harv. and Sond. *Fl. cap.* iii. 417.—*Bot. Reg.* t. 28, 40, 289 (*Calendula*).—*Bot. Mag.* t. 408, 1981, 2218 (*Calendula*), 1343 (*Arctotis*), 5252, 5337.

228. **Ruckeria** DC.[1]—Flowers 2-morphous; the radial female fertile, 1-seriate; limb of caligulate corolla subentire open; the discal hermaphrodite, sterile or the outer fertile; corolla regular, 5-fid. Anthers entire at base. Style branches short penicillate, truncate at apex. Exterior fruit oblong-obovoid angular or compressed costate, attenuate at base, contracted at apex and there crowned with a coma of dense woolly intricate hairs; the inner (vacuous) thin and bare.—Perennial herbs, glabrous or canescent; leaves basal rosulate or sometimes on stem smaller alternate, pinnatisect rigid; uppermost capitule[2] often solitary; receptacle flat nearly bare; bracts of broadly campanulate or hemispherical involucre subequal lanceolate coriaceous, sub-1-seriate.[3] (*South Africa.*[4])

229. **Tripteris** Less.[5]—Flowers 2-morphous; the radial female fertile, 1-seriate; limb of ligulate corolla[6] entire or 3-dentate open; the discal hermaphrodite sterile; limb of regular corolla[7] more or less extended, 5-dentate or fid. Anthers acuminately mucronate at base. Style of hermaphrodite flowers entire, depressed pyramidal or truncate at apex; of radial flowers recurved-2-branched. Fruit more or less broadly longitudinally membranously 3-alate[8] and crowned with a short cupule, without pappus.—Herbs, sometimes shrubby or subshrubby, often viscous-glandular[9]; leaves opposite or alternate, entire or variously dentate or incised; capitules terminal, solitary or loosely cymose; receptacle flat or convex, bare; bracts of more or less broadly campanulate or diskshaped involucre ∞, subequal, linear, often scarious at margin, sub-1-seriate. (*South. and north. trop. or subtrop. Africa, Levant? Australia.*[10])

230. **Osteospermum** L.[11]—Flowers[12] 2-morphous; the radial female few or 1-seriate; limb of ligulate corolla long open sub-

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[1] *Prodr.* vi. 483.—Endl. *Gen.* n. 2829.—B. H. *Gen.* ii. 453, n. 596.

[2] Rather large.

[3] A genus hence connecting the *Calenduleæ* with the *Arctotideæ* thence with the *Senecioneæ*.

[4] Spec. 2, 3, Deless. *Io. sell.* iv. 29, t. 66.—Harv. and Sond. *Fl. cap.* iii. 416.

[5] *Linnæa,* vi. 95.—Less. *Syn.* 90.—DC. *Prodr.* vi. 456.—Endl. *Gen.* n. 2824.—B. H. *Gen.* ii. n. 601.

[6] White, yellow, or purplish.

[7] Yellow or purplish. [8] Anterior wings 2.

[9] Sometimes with a strong odour.

[10] Spec. about 25. Thunb. *Fl. cap.* 702 (*Calendula*).—Jacq. *Ie. rar.* t. 596 (*Calendula*).—Harv. and Sond. *Fl. cap.* iii. 424.—Kotsch. *Pl. arab.* t. 1.—Benth. *Fl. austral.* iii. 695.—Boiss. *Fl. or.* iii. 419.

[11] *Gen.* n. 992.—Lamk, *Ill.* t. 714.—Less. *Syn.* 89.—DC. *Prodr.* vi. 459.—Endl. *Gen.* n. 2825.—B. H. *Gen.* ii. 455, n. 602.—*Chrysanthemoides* T. *Act. Acad. par.* (1705), 237.—*Eriocline* Cass. *Dict.* xv. 191.—? *Gibbaria* Cass. *Dict.* xviii. 526.—*Xerothamnus* DC. *Prodr.* v. 311.—*Lepisiphon* Turcz. *Bull. Mosc.* (1851), i. 80.

[12] Yellow.

entire; the discal hermaphrodite sterile; corolla tubular or narrowly campanulate, 5-dentate. Anthers caudately acuminate at base. Style of radial flowers 2-branched; of discal thickened at apex entire or 2-dentate. Fruit[1] straight or more rarely incurved, drupaceous; flesh more or less thick; putamen hard, sometimes costate and sulcate; pappus 0; the discal vacuous; pappus hairs 0 or 1-seriate.—Herbs, undershrubs or shrubs; leaves alternate or rarely opposite, entire, sinuate, dentate or sometimes pinnatifid; capitules[2] solitary or loosely cymose, pedunculate; receptacle bare, glabrous, minutely foveolate or setiferous; bracts of broad involucre sub-2–3-seriate. (*South Africa.*[3])

231. **Oligocarpus** LESS.[4]—Flowers[5] nearly of *Calendula*, 2-morphous; fruit (small) straight or slightly incurved polymorphous; the inner thick unequally rugose.—Annual or perennial glandular puberulous herbs; leaves alternate entire, sinuate or dentate; capitules (small) pedunculate at ends of twigs; involucre (small) &c. of *Calendula.*[6] (*West. south. and ins. Africa.*[7])

232. **Eriachænium** SCH. BIP.[8]—Flowers 2-morphous; the radial female few (1–2) or sometimes 0, fertile; the discal ∞, hermaphrodite sterile. Corollas all regular tubular; limb narrowly campanulate, 4–5-fid. Anthers caudately acuminate at base (in female flowers small, sterile or 0). Style capitate or thick conical at apex, entire or shortly 2-lobed. Radial fruit thick hard and involved in a dense white wool; the discal thin effete.—A small prostate branched herb[9]; leaves alternate elongate sinuate, amplexicaul at base, often woolly beneath; capitules axillar pedunculate; receptacle small bare; involucral bracts few membranous; the outer sometimes shorter.[10] (*Magellan.*[11])

232. **Dipterocome** F. and MEY.[12]—Flowers 2-morphous; the

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[1] H. BN, *Bull. Soc. Linn. Par.* 293.

[2] Rather large or small.

[3] Spec. about 35. LHÉR. *Stirp.* t. 6.—JACQ. *Hort. schœnbr.* t. 377.—HARV. and SOND. *Fl. cap.* iii. 433.—WALP. *Ann.* v. 199 (*Lepisiphon*).—THUNB. *Fl. cap.* 703 (*Calendula*).—HARV. and SOND. *Fl. cap.* iii. 433.

[4] *Syn.* 90.—ENDL. *Gen.* n. 2823.—B. H. *Gen.* ii. 455, n. 600.—? *Xenismia* DC. *Prodr.* v. 509 (ex B. H.).

[5] Yellow, very small.

[6] Of which perhaps rather a sect. capitules depauperated and fruit less curved.

[7] Spec. 3, 4. L. F. *Suppl.* 386 (*Osteospermum*).

[8] *Flora* (1855), 120.—B. H. *Gen.* ii. 456, n. 603.

[9] Habit of *portulaca.*

[10] A genus anomalous in the series.

[11] Spec. 1. *E. magellanicum* SCH. *loc. cit.* 121.—WALP. *Ann.* v. 350.

[12] *Ind. sem. H. petrop.* (1835), i. 26.—DC. *Prodr.* vii. 256.—ENDL. *Gen.* n. 2424.—B. H. *Gen.* ii. 454, n. 599.—*Jaubertia* SPACH, *Ill. pl. or.* iii. 131, t. 289 (not

radial female few fertile; limb of narrow-tubular corolla shortly 2-labiate; one lip 3-dentate; the other minute or 0; the discal hermaphrodite sterile; corolla tubular or narrowly campanulate, 5-lobed. Staminal filaments united in a tube; anthers entire at base. Style of hermaphrodite flowers capitellate at apex subentire or very shortly 2-dentate. Discal fruit[1] thin bare effete; the radial highly arcuate recurved rigid, bare at back, very convex in front unequally muricate, crowned at apex with 2 unequally muricate rigid appendages and a few caducous hairs.—A small glabrous annual[2]; leaves alternate linear; capitules in 1-parous, sometimes contracted cymes; receptacle small bare; bracts of ovoid involucre ∞, rather rigid unequal narrow imbricate, sometimes transparent at margin. (*Persia.*[3])

234. **Arctotis** L.[4]—Flowers 2-morphous; the radial female, fertile or more rarely sterile; limb of ligulate corolla[5] open, entire or minutely dentate; the discal hermaphrodite, generally fertile; limb of regular tubular or narrowly campanulate corolla[6] 5-dentate or 5-fid; teeth valvate, more or less thick or callose at apex. Anthers entire at base or more rarely obtusely sagittate-auriculate. Style branches of radial flowers more or less narrow acute open; of discal flowers (below apex often dilated in a cone or cylinder) more or less connate, papillose or smooth externally. Fruit ovoid glabrous or villose; ribs oftener 2, 3, or more rarely 5, sometimes aliform; pappus pales various, few or ∞, imbricate, transparent, entire or lacerate.—Herbs, oftener perennial, generally hoary tomentose or lanate, caulescent or subacaulous; leaves alternate or oftener basal rosulate, entire, sinuate, dentate or pinnately dissected; capitules[7] long or scarcely stipitate, solitary or loosely cymose,[8] receptacle flat or slightly convex, alveolate or

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[1] Nearly of *Calendula*, but recurved.

[2] Habit of *Kœlpinia*.

[3] Spec. 1. *D. pusilla* F. et Mey.—Boiss. *Fl. or.* iii. 420.—*Jaubertia kœlpinioides* Spach.—Walp. *Ann.* ii. 921.—*Kœlpinia sessilis* Boiss. *Diagn. or.* xi. 34.

[4] *Gen.* n. 991.—Gærtn. *Fruct.* ii. 439.—R. Br. *Ait. H. kew.* ii. 5, 169.—Less. *Syn.* 15.—DC. *Prodr.* vi. 484.—Endl. *Gen.* n. 2830.—B. H. *Gen.* ii. 458, n. 610.—*Steganotus* Cass. *Dict.* xxxv. 396.—*Odontoptera* Cass. *loc. cit.*

[5] White, pink, purplish, yellow, or golden.

[6] Same colour as the radial or sometimes fuscate or blackish.

[7] Oftener rather large, showy.

[8] Sections of the genus are:

Arctotheca Wendl. *Hort. herrenh.* 8, t. 6 (not Vaill.).—Less. *Syn.* 35.—DC. *Prodr.* vi. 495—Endl. *Gen.* n. 2835.—B. H. *Gen.* ii. 458, n. 608: radial flowers sterile; fruit glabrous and crowned with a short cupule; lateral ribs 2, dorsal 3. (*S. Africa.*)

Cryptostemma R. Br. *Ait. H. kew.* ed. 2, v. 141.—DC. *Prodr.* vi. 495.—Endl. *Gen.* n. 2836.—B. H. *Gen.* ii. 458, n. 609.—*Cynotis* Hoffm. (ex DC.).—*Microstephium* Less. *Linnæa*, vi. 92.—Endl. *Gen.* n. 2837.—*A iozonium* Kze, *Linnæa*, xvii. 572: radial flowers sterile; fruit fringed between the flowers; bracts of oftener hemispherical involucre ∞, unequal, ∞-seriately imbricate. (*South. and trop. east. Africa, Australia.*[1])

235 ? **Ursinia** Gærtn.[2]—Flowers nearly of *Arctotis*, 2-morphous; the radial neuter; corolla[3] ligulate; the discal hermaphrodite; corolla[4] regular. Anthers obtuse at base. Style branches of hermaphrodite flowers 2 (sometimes 3), obtuse dilated shortly penicillate. Fruit subterete, 10-costate; ribs sometimes in 5 pairs; pappus pales few (4–6) imbricate; in addition sometimes a few shorter aristiform.—Annual or perennial herbs, sometimes shrubby at base; leaves alternate, pinnatifid or pinnatisect; capitules terminal pedunculate, solitary or loosely cymose; receptacle paleaceous between flowers; bracts of short rather broad involucre imbricate unequal, ∞-seriate.[5] (*South. and trop. east. Africa.*[6])

236. **Gorteria** L.[7]—Flowers 2-morphous; the radial sterile,

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densely villose; pappus pales short irregular, girt with a short ring; lateral ribs 2, dorsal 3. (*S. Africa;* 1 species native of *Lusitania* and *Australia.*

Haplocarpha Less. *Linnæa*, vi. 90; *Syn.* 36. —DC. *Prodr.* vi. 495.—Endl. *Gen.* n. 2833.—B. H. *Gen.* ii. 457, n. 606.—*Damatris* Cass. *Dict.* xii. 471: fruit densely villose; ribs 5, dorsal 3; pappus pales ∞, narrow acuminate transparent; leaves all basal. (*S. and trop. Africa.*)

Venidium Less. *Linnæa*, vi. 91; *Syn.* 29.—DC. *Prodr.* vi. 491.—Endl. *Gen.* n. 2832.—B. H. *Gen.* ii. 450, n. 611.—*Cleitria* Schrad. *Ind. sem. H. gœtt.* (1831).—? *Anthospermum* Sch. bip. *Flora* (1841), 773: radial flowers fertile; fruit glabrous; dorsal ribs 2, 3, sometimes alate; pappus pales minute or 0. (*S. Africa.*)

Cymbonotus Cass. *Dict.* xxxv. 397.—DC. *Prodr.* vi. 491.—Endl. *Gen.* n. 2831.—B. H. *Gen.* ii. 457, n. 607: radial flowers fertile; fruit glabrous; ribs 5, transversely rugose or tuberculate, dorsal 3; pappus 0. (*Extratrop. Australia.*)

? *Landtia* Less. *Syn.* 37.—DC. *Prodr.* vi. 494. —Endl. *Gen.* n. 2834.—B. H. *Gen.* ii. 457, n. 605.—*Ublæa* J. Gay, *Rich. Fl. abyss.* i. 447. —*Schnittspahnia* Sch. bip. *Flora* (1842), 436: inflorescence contracted; capitules scarcely stipitate; involucral bracts fewer; fruit subglabrous, sparsely costate; pappus paleoles short or very short. (*S. Africa, Abyssinia.*)

[1] Spec. about 40. Jacq. *Hort. schœnbr.* t. 157-177, 306, 307, 378-382; *Fragm.* t. 47.—Jacq. f. *Ecl.* t. 51, 52.—Harv. and Sond. *Fl. cap.* iii. 448, 458 (*Venidium*), 464 (*Haplocarpha*), 466 (*Landtia, Arctotheca*), 467 (*Cryptostemma*).—Gaudich. *Freycin. Voy. Bot.* 462, t. 86 (*Cymbonotus*).—Steetz, *Pl. Preiss.* i. 486 (*Cymbonotus*). Benth. *Fl. austral.* iii. 674 (*Cymbonotus*).—Oliv. and Hiern. *Fl. trop. Afr.* iii. 426, 427 (*Landtia*). —Andr. *Bot. Repos.* t. 357.—*Bot. Reg.* t. 32, 34, 122, 130, 131.—*Bot. Mag.* t. 2182, 2252 (*Cryptostemma*).—Walp. *Rep.* vi. 276 (*Schnittspahnia*); *Ann.* ii. 922.

[2] *Fruct.* ii. 462, t. 174.—Less. *Syn.* 244.—DC. *Prodr.* v. 688.—Endl. *Gen.* n. 2627.—B. H. *Gen.* ii. 456, n. 604.—*Thelythamnos* Spreng. f. *Suppl.* 25.—*Chronobasis* DC. exs. *Dreg.* et *Eckl.*—*Sphenogyne* R. Br. *Ait. H. kew.* ed. 2, v. 142.—*Oligærion* Cass. *Dict.* ii. *Suppl.* 75; xxix. 187.—? *Sphermophylla* Neck. *Elem.* i. 24 (ex DC.).

[3] Yellow or externally purplish.

[4] Yellow.

[5] A genus connecting the *Arctotidean Calenduleæ* with the *Helenican Heliantheæ.*

[6] Spec. about 50. Jacq. *Hort. schœnbr.* t. 156 (*Arctotis*).—Lamk, *Ill.* t. 716.—Harv. and Sond. *Fl. cap.* iii. 137 (*Sphenogyne*), 150.—Oliv. and Hiern, *Fl. trop. Afr.* iii. 425.—Knowl. et Westc. *Fl. Cab.* t. 77 (*Sphenogyne*).—*Bot. Reg.* t. 604.—*Bot. Mag.* t. 544 (*Arctotis*), 3042 (*Sphenogyne*).

[7] *Gen.* n. 982 (not Lamk).—Gærtn. *Fruct.* ii. 427, t. 171.—Less. *Syn.* 51.—DC. *Prodr.* vi. 500.—Endl. *Gen.* n. 2841.—B. H. *Gen.* ii. 459, n. 612.—*Personaria* Lamk, *Ill.* t. 716.—? *Ictinus* Cass. *Dict.* xxii. 559.

1-seriate; corolla[1] ligulate; the discal hermaphrodite, fertile (or the inmost sterile); corolla[2] regular, 5-fid. Anthers shortly auriculate or rather mucronate at base. Style of sterile flowers oftener undivided; of the fertile 2-lobed; branches linear, acute or obtuse, free, sometimes revolute or more or less deeply concrescent. Fruit ovoid, obconical or shortly fusiform; pappus pales setose or linear transparent, sometimes short or connate in a crown, or 0.—Herbs or shrublets, sometimes branched, hispid or unarmed; leaves entire, dentate or pinnatisect; capitules terminal discrescent, sessile or stipitate; receptacle bare, alveolate, fringed or paleaceous; involucral bracts connate at base or higher, acute at apex, spinescent or unarmed.[3] (*South Africa.*[4])

237. **Berkheya** Ehrh.[5]—Flowers[6] oftener 2-morphous; the radial neuter, 1-seriate (or 0); corolla ligulate entire; the discal hermaphrodite fertile (or the inmost sterile); limb of tubular corolla more or less expanded, 5-fid. Anthers obtuse or acuminate-caudate at base. Style of sterile flowers undivided; of fertile 2-branched; branches narrow, oftener rather obtuse at apex. Fruit oblong or obconical, 10-costate villose; pappus pales rigid or setose, sometimes short, free or connate in a cupule, or 0.—Small shrubs or herbs, often spinescent[7]; leaves alternate or opposite, sometimes decurrent, spinescent-pinnatifid or pinnatisect; capitules solitary or corymbiform-cymose; receptacle produced in deep fringed or dentate or sometimes long spinescent alveoles

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[1] Yellow or purplish.

[2] Yellow.

[3] Sections of the genus are:

Hirpicium Cass. *Bull. Soc. philom.* (1820), 27; *Dict.* xxi. 238; xxix. 448, 450.—Less. *Syn.* 53.—DC. *Prodr.* vi. 502.—Endl. *Gen.* n. 2842.—B. H. *Gen.* ii. 460, n. 614: stem shrubby branched; leaves small rather stiff; involucre not spinescent; pappus coroniform, finally resolved into hairs or 0.

Gazania Gærtn. *Fruct.* ii. 451, t. 173.—Less. *Syn.* 41.—DC. *Prodr.* vi. 508.—Endl. *Gen.* n. 3845.—B. H. *Gen.* ii. 459, n. 613.—*Mussinia* W. *Spec.* iii. 2263.—*Mœhnia* Neck. *Elem.* i. 9.—*Melanchrysum* Cass. *Bull. Soc. philom.* (1817); *Dict.* xxix. 441: stem short or diffusely herbaceous, glabrous or tomentose; leaves entire or pinnatisect, not pungent; capitules stipitate; involucre not spinescent; fruit densely villose; pappus pales linear transparent.

[4] Spec. 25–30. Jacq. *Coll.* iv. t. 21.—Reichb. *Ic. et descr. pl.* t. 15 (*Gazania*).—Andr. *Bot. Repos.* t. 523.—Harv. and Sond. *Fl. cap.* iii. 470, 471 (*Gazania*), 485 (*Hirpicium*).—Oliv. and Hiern, *Fl. trop. Afr.* iii. 428 (*Gazania*).—*Bot. Reg.* t. 35 (*Gazania*).—*Bot. Mag.* t. 90; 2270 (*Gazania*).

[5] *Beitr.* (1788), iii. 137.—Less. *Syn.* 69.—DC. *Prodr.* vi. 504.—Endl. *Gen.* n. 2844.—B. H. *Gen.* ii. 460, n. 616.—*Crocodilodes* Adans. *Fam. des pl.* ii. 127 (a prior name and rightly preferred).—*Basteria* Houtt. *Pfl. Syst.* ii. t. 34 (ex DC.).—*Gorteria* Lamk, *Ill.* t. 702 (not L.).—*Agriphyllum* J. *Gen.* 190.—*Zarabellia* Neck. *Elem.* i. 10 (1790).—*Rohria* Vahl et Thunb. *Act. hafn.* iii. 97; iv. 1.—*Stobæa* Thunb. *Prodr. Fl. cap. Præf.* (1794).—*Apuleia* Gærtn. *Fruct.* ii. 439, t. 17 (not Mart.).—*Arelina* Neck. *Elem.* i. 83 (ex Cass.).—*Cuspidia* Gærtn. *Fruct.* ii. 454.—*Aspidalis* Gærtn. *loc. cit.* t. 171.—*Eropis* Cass. *Dict.* xxix. 453.—*Heterorachis* Sch. bip. *Flora* (1844), 775.

[6] Yellow.

[7] Often the habit of *Carduus*.

finally enclosing the fruit; involucral bracts ∞, imbricate, free or connate at base, rigid, ciliate or spinescent.[1] (*South trop. Africa.*[2])

238. **Didelta** Lhér.[3]—Flowers[4] (nearly of *Berkheya* or *Callumia*) 2-morphous; the radial neuter or sometimes 0; the discal hermaphrodite. Fruit obconical, oblong or compressed, often attenuate at base, glabrous; pappus pales short connate in an incised or aristate cupule.—Herbs, sometimes subshrubby, nearly unarmed; leaves alternate or opposite, entire or sparsely spinescent-ciliate; capitules[5] terminal stipitate; receptacle produced in alveoles enclosing the fruit and fringed or spinescent at margin; involucral bracts ∞-seriate very dissimilar; the outer produced in a large foliaceous blade often seceding at the base after maturity, samariform, thickened at base, sometimes glandular ciliate within. Other characters of *Berkheya.*[6] (*South Africa.*[7])

239. **Cullumia** R. Br.[8]—Flowers[9] 2-morphous; the radial neuter, 1-seriate; limb of ligulate corolla long-open entire; the discal hermaphrodite, fertile, or the interior sometimes sterile; limb of regular corolla narrow-campanulate, 5-fid. Anthers caudate-acuminate at base. Style branches short rather obtuse. Fruit oblong 5–10-costate; pappus 0 or cupular-subglobular.—Shrubs or undershrubs; leaves alternate, sessile rigid, dentate, spinose or ciliate, rarely entire or ericoid, imbricate; capitules terminal sessile solitary; involucral bracts rigid, entire or spinose or ciliate; receptacle produced in deep areoles finally enclosing fruit and fringed or dentate at margin. (*South Africa.*[10])

240? **Platycarpha** Less.[11]—Flowers[12] hermaphrodite fertile, 1-morphous; limb of long and narrow tubular corolla 5-fid.

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[1] *Stephanocoma* Less. *Syn.* 56 (part.).—B. H. *Gen.* ii. 461, n. 617, an anomalous species of this genus; radial flowers 0; alveoles of receptacle long-spinescent.

[2] Spec. about 65. Jacq. *Ic. rar.* t. 591 (*Gorteria*).—Harv. and Sond. *Fl. cap.* iii. 485 (*Stephanocoma*), 486 (*Stobæa*), 501.—Oliv. and Hiern, *Fl. trop. Afr.* iii. 428.—*Bot. Mag.* t. 1788 (*Stobæa*), 1844, 2094, 5715 (*Stobæa*).

[3] *St. nov.* 55, t. 22.—Lamk, *Ill.* t. 705.——Less. *Syn.* 59.—DC. *Prodr.* vi. 503.—Endl. *Gen.* n. 2843.—B. H. *Gen.* ii. 461, n. 618.—*Choristea* Thunb. *Prodr. Fl. cap. Præf.*; *Fl. cap.* 702.—*Favonium* Gærtn. *Fruct.* ii. 431, t. 174.—Lamk, *Ill.* t. 713.

[4] Yellow.

[5] Rather large, showy.

[6] To which the genus is very near.

[7] Spec. 3. Ait. *H. kew.* iii. 256.—R. Br. *Ait. op. cit.* ed. 2, v. 139.—Harv. and Sond. *Fl. cap.* iii. 510.

[8] *Ait. Hort. kew.* ed. 2, v. 137.—Less. *Syn.* 81.—DC. *Prodr.* vi. 497.—Endl. *Gen.* n. 2840.—B. H. *Gen.* ii. 460, n. 615.

[9] Yellow.

[10] Spec. 14. Schr. *H. monac.* t. 97 (*Berkheya*).—Harv. and Sond. *Fl. cap.* iii. 481.—*Bot. Reg.* t. 384.—*Bot. Mag.* t. 2095.

[11] *Linnæa*, vi. 688; *Syn.* 148.—DC. *Prodr.* v. 71.—Endl. *Gen.* n. 2210.—B. H. *Gen.* ii. 462, n. 620.

[12] Violet.

Anthers shortly rather obtusely or acutely auriculate at base. Style branches short rather acute. Fruit obpyramidal or sometimes rather compressed, obtusely 10-costate; pappus pales few (1–10) radiating, connate quite at base, rigid rather acute.—Perennial herbs[1]; stem very short; leaves basal rosulate, pinnatisect or sinuate-lobed, spinosely or obtusely dentate, whitish beneath; capitules connate in a contracted glomerule subsessile between the leaves; involucral bracts ∞, imbricate, unequal, dry, acute; the outer spinescent-appendiculate; the inner smaller passing gradually into linear pales surrounding the outer fruit.[2] (*South Africa*).

VII. HELIANTHEÆ.

241. **Helianthus** L.—Flowers 2-morphous or rarely, by defect of the radial, 1-morphous; the radial neutral, fertile or more rarely sterile (sometimes 0); limb of ligulate corolla open elongate, entire or few-dentate; the discal hermaphrodite fertile; limb of regular tubular corolla elongate cylindrically expanded, 5-fid or 5-dentate. Anthers entire or decurrent at base, sometimes minutely 2-dentate or 2-lobed. Style branches of radial flowers narrow recurved; of the hermaphrodite short or long hirtusely appendiculate at apex. Fruit oblong or oblong ovoid, rather compressed or 2–5-angled; pappus hairs few (often 2), more or less paleaceously dilated at base and there sometimes connate, caducous; in addition sometimes a few intermediate persistent squamules.—Herbs, annual, perennial or with shrubby base; stem subterraneous sometimes tuberous; leaves opposite or more rarely alternate, sometimes all basal, petiolate, entire, dentate or 3-lobed, sometimes 3-plinerved; capitules pedunculate; bracts of broadly diskshaped or hemispherical involucre 2-∞-seriate, membranous or herbaceous, sometimes squarrose, obtuse or foliately acuminate; receptacle flat or convex and loaded with complicated pales enclosing the discal flowers. (*Warm extratrop. N. and S. America, Cuba.*) *See p.* 46.

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[1] With the habit of *Arctotis* f.

[2] A genus of uncertain place in the order, apparently connecting, by the intervention of *Gundelia*, the *Gorteriea* with the *Vernonieæ* and *Carduea*.

[3] Spec. 1, 2, THUNB. *Fl. cap.* 141 (*Cynara*).—W. *Spec. plant.* iii. 1692 (*Cynara*).—SPRENG. *Syst.* iii. 394 (*Stobæa*).—HARV. and SOND. *Fl. cap.* iii. 54.

242? **Dimerostemma** Cass.[1]—Flowers[2] 2-morphous (or radial sometimes wanting, 1-morphous?); the radial female fertile or neutral, 1-seriate; limb of ligulate corolla open, sometimes short, entire or few-dentate; the discal hermaphrodite fertile; limb of regular corolla cylindrical or narrow-campanulate, 5-fid or dentate. Anthers (sometimes exserted) entire or mucronate at base.[3] Style branches of discal flowers hirsute at apex short rather obtuse or (as in ray) more or less long-appendiculate. Fruit laterally compressed, angular or more or less broadly alate at margins; pappus pales 2[4], or 3–6; the lateral smaller, more or less connate at base; rarely ∞, setulose or 0.—Herbs or shrubs, oftener scabrous or villose; leaves opposite or more rarely alternate,[5] petiolate, entire or dentate, oftener triplinerved, sometimes lobed or 2–3-pinnatisect; capitules oftener long stipitate, axillar, terminal or in corymbiform cymes; bracts of campanulate or hemispherical involucre few—or many—seriate, imbricate, herbaceous or coriaceous, passing within into complicated pales surrounding the flowers and inserted on a convex or flat receptacle.[6] (*Trop. and sub-trop. N. and S. America, Galapagos, and Sandwich Is.*[7])

243. **Wulffia** Neck.[8]—Flowers[9] (nearly of *Helianthus*) 1–2-

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[1] *Bull. Soc. philom.* (1817); *Dict. sc. nat.* xiii. 253.—DC. *Prodr.* vii. 255.—Endl. *Gen.* 503 (12).—B. H. *Gen.* ii. 376, n. 401.—H. Bn, *Bull. Soc. Linn. Par.* 274.—(1881).—*Oyedæa* DC. *Prodr.* v. 576 (1836).—Deless. *Ic. sel.* iv. t. 34.—Endl. *Gen.* n. 2532.—A. Gray, *Proc. Amer. Acad.* v. 183.—B. H. *Gen.* ii. 374, n. 396. —*Serpæa* Gardn. *Hook. Lond. Journ.* vii. 296.

[2] Yellow.

[3] As in many *Helianthea*, articulated to top of filament.

[4] Anterior and posterior with continuous margins.

[5] Sometimes in the same plant.

[6] Sections of the genus are:

Zexmenia Ll. et Lex. *Nov. veg. descr.* i. 13 (1824).—B. H. *Gen.* ii. 373, n. 395.—A. Gray, *Pl. Wright. tex.* i. 112.—*Lipochæta* DC. *Prodr.* v. 610 (n. 1–4).—Endl. *Gen.* n. 2547 (part.).—*Lasianthæa* DC. *Prodr.* v. 607.—Endl. *Gen.* n. 2544.—*Lasianthus* Zucc. (ex DC. not Jacq.): radial flowers fertile; other characters of *Oyedæa*. (*Warm Amer.*)

Lipochæta DC. *loc. cit.* (n. 5–9).—A. Gray, *Proc. Amer. Acad.* v. 129.—B. H. *Gen.* ii. 372, n. 394.—*Microchæta* Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 450.—*Schizophyllum* Nutt. *loc. cit.* 452.—*Aphanopappus* Endl. *Gen.* Suppl. ii. 43.—*Macræa* Hook. f. *Trans. Linn. Soc.* xx. 209.—*Trigonopterum* Steetz, *Anders. Enum. Galap.* (*Trans. Acad. sc. Stock.* (1853), 161): leaves entire lobed or pinnatisect; radial flowers fertile; pappus hairs smaller beyond 2, sometimes 0. (*Galapagos and Sandwich Islands.*)

[7] Spec. 55–60. Deless. *Ic. sel.* iv. t. 36 (*Lipochæta*).—Pœpp. et Endl. *Nov. gen. et sp.* t. 256 (*Lipochæta*).—Don, *Bot. Mag.* t. 3384 (*Wedelia*). —Hook. *Bot. Mag.* t. 3901 (*Tithonia*).—? H. B. K. *Nov. gen. et sp.* iv. 216, t. 372 (*Wedelia*). Walp. *Rep.* vi. 170 (*Aphanopappus*), 311 (*Macræa*); *Ann.* ii. 858 (*Oyedæa*), 859 (*Serpæa*), 861, n. 4, 5 (*Viguiera*), 867 (*Lipochæta*); v. 218 (*Trigonopterum*), 225 (*Zexmenia*).

[8] *Elem.* i. 35 (1790).—DC. *Prodr.* v. 563.—Endl. *Gen.* n. 2521.—B. H. *Gen.* ii. 367, n. 383. —*Chylodia* Cass. *Dict.* xxix. 491.—*Chakiatella* Cass. *loc. cit.*—*Tilesia* G.-F.-W. Mey. *Prim. Fl. essequeb.* 251.—DC. *Prodr.* v. 549.—*Melanthera* Rohr. *Skr. N. Selsk. Kjob.* ii. 213.—DC. *Prodr.* v. 545.—Endl. *Gen.* n. 2499.—B. H. *Gen.* ii. 377, n. 403.—*Lipotriche* R. Br. *Trans. Linn. Soc.* xii. 118 (not Less.).—Endl. *Gen.* n. 2498.—*Psathurochæta* DC. *Prodr.* v. 609.—Endl. *Gen.* n. 2546.—*Trigonotheca* Sch. bip. *Pl. Krauss. natal.* (ex B. H.).—*Würschmittia* Sch. bip. *Flora* (1841), *Ergänzbl.* 27.—*Echinocephalum* Gardn. *Hook. Lond. Journ.* vii. 294.

[9] Yellow or white.

morphous; the radial fertile or sterile (or 0); ligules entire or 2-dentate; the discal hermaphrodite; corolla regular, 5-dentate. Anthers entire or obtusely auriculate at base. Style, &c., of *Helianthus*. Fruit short, obovoid or oblong, 3–4-angled or subcompressed; pappus hairs ∞, or sometimes 1–3, very caducous, or 0.—Herbs or undershrubs, scabrous or villose; leaves opposite, petiolate, entire, serrate or 3-lobed; capitules finally globular terminal, solitary or few-cymose; bracts of hemispherical involucre little unequal, 2–3-seriate; receptacle more or less convex and loaded with concave pales subtending and surrounding the hermaphrodite flowers.[1] (*Trop. America and Africa.*[2])

244. **Perymenium** Schrad.[3]—Flowers[4] all fertile; the radial female; corolla ligulate, entire or minutely dentate; the discal hermaphrodite; corolla tubular. Anthers mutico-sagittate at base. Style branches long cuneate, shortly acutately appendiculate, sometimes hirsute above. Fruit thick compressed or 3-quetrous, obtuse at apex; pappus hairs ∞, aristiform unequal, free or connate at base, caducous. Other characters of *Helianthus* or *Wulffia*).—Perennial or subshrubby herbs; leaves[5] opposite, entire or dentate, 3-plinerved, generally hoary beneath; capitules in terminal corymbiform cymes; bracts of hemispherical or ovoid involucre herbaceous or coriaceous few-seriate; pales of convex receptacle surrounding flowers. (*Mexico, Peru.*[6])

245. **Garcilassa** Pœpp. and Endl.[7]—"Flowers regular 1-morphous; limb of tubular corolla campanulate, 5-fid. Anthers entire at base. Style branches acute. Fruit oblong laterally compressed; pappus very short, annular ciliolately fringed.—Tall scabrous or

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[1] Sect. 3: 1. *Euwulffia*: pappus 0; fruit (sometimes rather fleshy) obovoid or oblong.—2. *Melanthera*: pappus hairs ∞, or 2, 3, or sometimes (in the same capitule) 0; fruit shorter, thick.—3. (Little anomalous) *Balsamorhiza* Hook. *Fl. bor.-amer.* i. 310.—B. H. *Gen.* ii. 366, n. 381.—*Espeletia* Nutt. *Journ. Acad. Philad.* vii. 37, t. 4 (not H. B. K.): stem herbaceous; leaves alternate basal rosulate; scapes leafless or few-leaved; outer bracts of broad involucre foliaceous; fruit epappose. (*N. Amer.*) A sect. connecting the genus in some respects with *Heliopsis*.

[2] Spec. about 22. Jacq. *Ic. rar.* t. 583 (*Calea*).—Schum. et Thönn. *Beskr.* 392 (*Buphthalmum*).—Griseb. *Fl. brit. W.-Ind.* 372.—Oliv. and Hiern, *Fl. trop. Afr.* iii. 381.—A. Gray, *Proc. Amer. Acad.* vii. 356; *Bot. Amer. expl. Exp.* ii. t. 11 (*Balsamorhiza*).—*Bot. Reg.* t. 662 (*Gymnolomia*).—Walp. *Rep.* ii. 610 (*Balsamorhiza*); vi. 157 (*Lipotriche*), 161 (*Würschmittia*); *Ann.* ii. 853 (*Balsamorhiza*), 856, 858 (*Echinocephalum*); v. 217 (*Melanthera*), 220.

[3] *Ind. sem. H. gœtt.* (1830).—DC. *Prodr.* v. 608, n. 2–8.—Endl. *Gen.* n. 2545 (part.).—B. H. *Gen.* ii. 377, n. 402.

[4] Yellow.

[5] With the nervation of some *Melastomaceæ*.

[6] Spec. about 10. Less. *Linnæa* (1831), 408 (*Lipotriche*).

[7] *Nov. gen. et spec.* iii. 45, t. 251.—B. H. *Gen.* ii. 382, n. 415.

hispid herbs; leaves alternate (large) serrate, 3-nerved; capitules 4–5-flowered (small) globularly glomerulate between floral leaves; bracts of very short involucre small few; receptacle small, loaded with membranous pales surrounding the flowers." (*Peru.*[1])

246? **Chænocephalus** Griseb.[2]—"Flowers 1-morphous hermaphrodite; the outermost sometimes abortive; corolla tube filiform; limb abruptly dilated, 5-dentate. Anthers auriculate at base. Style branches elongate with acute or shortly conical appendage. Fruit laterally compressed, alate at margin, 2-aristate at apex.—Shrubs; leaves alternate or obliquely opposite; capitules few- (1–16) flowered in highly branched corymbose-fastigiate cyme; involucral bracts few, unequal, passing into complicated pales surrounding the flowers." (*Antilles, warm and extratrop. S. America.*[3])

247. **Verbesina** L.[4]—Flowers oftener 2-morphous; the radial oftener 1-2-seriate, female or neutral, fertile or sterile (sometimes 0); limb of ligulate corolla[5] open, entire or oftener few-dentate; the discal hermaphrodite, fertile; limb of regular corolla[6] more or less expanded, 4–5-dentate or fid. Anthers at obtuse base entire or shortly auriculate. Style branches of female flowers shortly or acutely appendiculate, oftener papillose-hirsute. Fruit compressed or 3-quetrous; angles or margins more or less broadly alate; pappus consisting of 1, 2 aristæ (anterior and posterior), or more rarely ∞, free or more or less connate in a cupule, persistent or deciduous, rigid or sometimes cartilaginous, sometimes scale-like or thin (or sometimes 0).—Herbs, undershrubs or sometimes shrubs; indumentum various; leaves opposite or alternate,[7] petiolate, sessile, or alately decurrent, entire or oftener dentate or lobed; capitules[8] solitary or oftener in cymes or much branched cymiferous racemes; bracts of hemispherical, broad or shortly campanulate involucre imbricate or few-seriate; the outer herbaceous or foliaceous or sometimes dry; the inner thinner and

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[1] *G. rivularis* Pœpp. et Endl.—Walp. *Rep.* vi. 147.

[2] *Fl. brit. W.-Ind.* 374.—B. H. *Gen.* ii. 382, n. 414.

[3] Spec. 4, 5. Griseb. *Symb. Fl. argent.* 195.

[4] *Gen.* n. 975.—J. *Gen.* 188.—Less. *Syn.* 231.—DC. *Prodr.* v. 612.—Endl. *Gen.* n. 2550.—B. H. *Gen.* ii. 379, n. 407.—? *Locheria* Neck. *Elem.* i. 41.—*Phæthusa* Gærtn. *Fruct.* ii. 425, t. 169.—*Ditrichum* Cass. *Bull. Soc. philom.* (1817), 33; *Dict.* xiii. 371.—Endl. *Gen.* n. 2551.—DC. *Prodr.* v. 619 (*Ditrichum*).—*Hamulium* Cass. *Dict.* xx. 260.—*Ancistrophora* A. Gray, *Mem. Amer. Acad.* ser. 2, vi. 457.—? *Abesina* Neck. *Elem.* i. 33 (ex Cass.).

[5] Yellow or white. [6] Yellow or (?) white.

[7] Often in the same plant.

[8] Rather large or small.

narrower, often passing into complicated pales around the flowers; receptacle more or less convex.[1] (*Trop. and sub-trop. reg. of both worlds.*[2])

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[1] Sections of this genus, not clearly defined, are:

Ximenesia CAV. *Icon.* ii. 60, t. 178.—DC. *Prodr.* v. 627.—ENDL. *Gen.* n. 2555: stem annual; involucral bracts herbaceous elongate or foliaceous; pappus hairs thin.—*Encelia* ADANS. *Fam. des pl.* ii. 128.—DC. *Prodr.* v. 566.—ENDL. *Gen.* n. 2524.—B. H. *Gen.* ii. 378, 1234, n. 404.—A. GRAY, *Proc. Amer. Acad.* viii. 656.—*Pallasia* LHÉR. *Diss.* (1784), ex DC. (not L.).—*Simsia* PERS. *Syn.* ii. 478.—DC. *Prodr.* v. 577.—ENDL. *Gen.* n. 2533.—*Armania* BERT. *DC. Prodr.* v. 576.—ENDL. *Gen.* n. 2531.—*Geræa* TORR. et GR. *Proc. Amer. Acad.* i. 48.—*Barattia* A. GR. et ENGELM. *Proc. Amer. Acad.* i. 48: stem herbaceous or subshrubby; leaves opposite or alternate; capitules stipitate; outer bracts of involucre oftener smaller; radial flowers sterile; fruit attenuate at margin (not alate) and often ciliate. (*N. and S. America.*) Sect. (like the following) closely connecting *Verbesina* with *Dimerostemma.*

Blainvillea CASS. *Journ. Phys.* (1823), 216; *Dict.* xxix. 493.—DC. *Prodr.* v. 492.—ENDL. *Gen.* n. 2447.—B. H. *Gen,* ii. 369, n. 390.—*Galophthalmum* NEES et MART. *N. Act. nat. Cur.* xii. 7, t. 2.—DC. *Prodr.* vii. 257: stem herbaceous; leaves opposite or the upper alternate; capitules subsessile or stipitate (small); radial flowers fertile; ligula often small; pappus hairs 2–6, connate in an unequal cyathus (sometimes very short, persistent. (*Trop. reg. of both worlds.*)

Aspilia DUP.-TH. *Gen. nov. madag.* 12.—DC. *Prodr.* v. 561.—ENDL. *Gen.* n. 2519.—B. H. *Gen.* ii. 371, n. 393.—*Anomostephium* DC. *Prodr.* v. 560 (n. 1, 3, 4).—*Coronocarpus* SCHUM. et THÖNN. *Beskr.* 393.—*Dipterotheca* SCH. BIP. *Flora* (1842), 434.—*Virtgenia* SCH. BIP. *loc. cit.* 435: stem herbaceous; leaves opposite or alternate; capitules stipitate or subsessile, solitary few or compound cymose ∞; radial flowers neutral; ligula small or evolute; pappus of *Blainvillea;* fruit slightly compressed or 3-angled, aristate or more rarely epappose. (*Trop. reg. of both hemisph.*)

Pascalia ORTEG. *Dec.* 39, t. 4.—DC. *Prodr.* v. 549.—ENDL. *Gen.* n. 2504.—B. H. *Gen.* ii. 369, n. 388: stem herbaceous; leaves opposite; capitules pedunculate; radial flowers fertile, 1–2-seriate; fruit obcompressed, 3–4-angled; pappus hairs ∞, fimbriate, scalelike, 2 oftener thinner. (*Chili.*)

? *Borrichia* ADANS. *Fam. des pl.* ii. 130.—DC. *Prodr.* v. 488.—ENDL. *Gen.* n. 2445.—B. H. *Gen.* ii. 368, n. 387.—*Diomedea* CASS. *Bull. Soc. philom.* (1815), 175; *Dict.* xiii. 283.—? *Helicta* CASS. *Bull. Soc. philom.* (1818), 167; *Dict.* xx. 461.—ENDL. *Gen.* n. 2494.—*Trimetra* SESS. et MOC. ex DC. *Prodr.* vii. 262.—*Adelmannia* REICHB. *Consp.* 110: stem subshrubby or shrubby; leaves opposite, often (from maritime situation) somewhat fleshy; outer involucral bracts more or less foliaceous; capitules pedunculate; radial flowers fertile; fruit 2–4-angled; pappus hairs connate in an unequally divided or dentate cupule. (*Antilles and op. shores of both Amer.*)

Oligogyne DC. *Prodr.* v. 629; vii. 291.—DELESS. *Ic. sel.* iv. t. 38.—ENDL. *Gen.* n. 2558.—*Calytocarpus* LESS. *Syn.* 221.—DC. *Prodr.* v. 629.—*Eisenmannia* SCH. BIP. *Kotsch. Exs. nub.*: stem slender; leaves opposite glabrous; flowers of *Wedelia;* pappus hairs connate in a short lacerate cupule; other characters of *Blainvillea.* (*Trop. Amer. and Africa.*)

Ridan ADANS. *Fam. des pl.* ii. 130.—*Actinomeris* NUTT. *Pl. N.-Amer.* ii. 181.—DC. *Prodr.* v. 575; vii. 290.—ENDL. *Gen.* n. 2530.—B. H. *Gen.* ii. 379, n. 406.—*Pterophyton* CASS. *Bull. Soc. philom.* (1818); *Dict.* xliv. 48: stem herbaceous; radial flowers sterile or neuter; pappus 2-aristate, rudimentary or 0; other characters of *Euverbesina.* (*N. Amer.*)

Helianthella TORR. et GR. *Fl. N.-Amer.* ii. 333.—B. H. *Gen.* ii. 378, n. 405: stem herbaceous, not or sparsely branched; leaves opposite or alternate; capitules long-stipitate large; outer involucral bracts often larger and foliaceous; fruit 2-angled, marginate or narrow-alate; pappus hairs ∞, 2 larger; radial flowers sterile; ligula elongate, oftener patent. (*N. Amer.*)

Wedelia JACQ. *St. amer.* 217, t. 130.—DC. *Prodr.* v. 538.—CASS. *Dict.* xlvi. 409.—ENDL. *Gen.* n. 2496.—B. H. *Gen.* ii. 370, n. 391.—? *Niebuhria* NECK. *Elem.* i. 30 (ex DC.).—*Trichostephus* CASS. *Dict.* lx. 618.—*Trichostemma* CASS. *loc. cit.* xlvi. 409.—*Stemmodontia* CASS. *loc. cit.* xlvi. 407.—*Wollastonia* DC. *Herb. timor.* 86; *Prodr.* v. 546.—ENDL. *Gen.* n. 2502.—? *Menotriche* STEEZ, *Pet. Mos. Bot.* 472: stem herbaceous or subshrubby; leaves opposite; capitules stipitate; radial flowers fertile; fruit somewhat compressed or 3-angled; pappus hairs 1, 2, or ∞, more or less long-ciliate and connate at base in a more or less regular deep cyathus, sometimes small, very small or 0. (*All trop. reg.*)

[2] Spec. about 180 (enumerat. about 240).

248. **Podachænium** Benth.[1]—Flowers[2] fertile (or radial sometimes sterile), 2-morphous; the radial female; limb of ligulate corolla elongate open, entire or few-dentate; the discal hermaphrodite; tube of tubular corolla short; limb cylindrical, rather long, 5-dentate. Anthers thinly mucronate at base. Style branches slender scarcely compressed, acute, finally revolute. Fruit long obconical; obtusely angled or laterally somewhat compressed, sometimes narrowly alate (nigrescent); wings decurrent on stipes of fruit and there broader; pappus hairs connate at base in an unequally divided crown; 2 longer.[3]—A tall shrub or undershrub; leaves[4] opposite (very large) angular-lobed and alately contracted at base; capitules (subglobular) in a large loose corymbiform cyme; bracts of short (finally reflexed) involucre few-seriate unequal herbaceous; receptacle conical and loaded with complicated bracts encircling flowers. (*Mexico, centr. America.*[5])

249: **Spilanthus** L.[6]—Flowers fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla[7] open, entire or 2–3-dentate; the discal hermaphrodite; limb of regular tubular or subventral corolla[8] narrow campanulate, 4–5-fid. Anthers at

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Dill. *H. eltham.* t. 88 (*Asteriscus*).—Jacq. *Ic. rar.* t. 175; 594 (*Coreopsis*); *H. vindob.* t. 110 (*Coreopsis*); *H. schœnbr.* iii. t. 305.—Cav. *Icon.* t. 61, 77 (*Coreopsis*), 99 (*Bidens*), 100; 210 (*Encelia*), 214; 260 (*Coreopsis*), 275; 280 (*Coreopsis*).—P. Beauv. *Fl. ow. et ben.* i. t. 69 (*Wedelia*).—Colla, *H. ripul.* t. 31. —H. B. *Pl. æquin.* t. 111 (*Pallasia*).—H. B. K. *Nov. gen. et spec.* iv. t. 380 (*Ximenesia*).—Delese. *Ic. sel.* iv. t. 2 (*Anomostephium*).—Wight, *Icon.* t. 1107 (*Wedelia*); *Ill.* t. 1106 (*Wedelia*).—Hook. *Icon.* t. 101 (*Oligogyne*); *Comp. Bot. Mag.* t. 5 (*Wedelia*).—Pœpp. et Endl. *Nov. gen. et sp.* t. 256 (*Lipochæta*).—Torr. *Whippl. Exp. Bot.* 47 (*Helianthella*).—A. Gray, *Pl. Lindheim.* 228 (*Simsia*); *Emor. Rep. Bot.* 89 (*Simsia*); *Proc. Acad. Philad.* (1863), 65 (*Helianthella*); *Man.* (ed. 1856), 219 (*Actinomeris*), 222.—Karst. *Fl. columb.* t. 135.—Eat. *Fort. parall. Bot.* 170 (*Helianthella*).—Chapm. *Fl. S. Unit. St.* 224 (*Borrichia*), 237.—Sch. bip. *Seem. Her.* 304 (*Wirtgenia*).—Fr. et Sav. *Enum. pl. jap.* i. 232 (*Wedelia*).—Remy, *C. Gay Fl. chil.* iv. 280 (*Encelia*).—Griseb. *Fl. brit. W.-Ind.* 371 (*Borrichia, Wedelia*), 374; *Symb. Fl. argent.* 190 (*Wedelia*), 191 (*Aspilia*), 193.—Miq. *Fl. ind.-bat.* ii. 68 (*Wedelia*), 70 (*Wollastonia*).—Benth. *Fl. austral.* iii. 537 (*Wedelia*).—Oliv. and Hiern, *Fl. trop. Afr.* iii. 374 (*Blainvillea*), 376 (*Wedelia*), 378 (*Aspilia*), 383 (*Ximenesia*).—Andr. *Bot. Repos.* t. 549 (*Pascalia*).—*Bot. Reg.* t. 543 (*Wedelia*), 909 (*Encelia*).—*Bot. Mag.* t. 1627 (*Spilanthes*), 1716.—Walp. *Rep.* ii. 608 (*Wedelia*), 609 (*Pascalia*), 612 (*Encelia*); vi. 146 (*Wirtgenia*), 157 (*Wedelia*); *Ann.* i. 413 (*Wedelia*); 415; ii. 853 (*Wedelia*); 857 (*Saubinetia*), 858 (*Actinomeris*), 860 (*Simsia*), 867; v. 217 (*Wedelia, Wollastonia*), 221 (*Encelia*), 222 (*Actinomeris, Simsia*), 227; 229 (*Ximenesia*).

[1] *Kjob. Vidensk. Medd.* (1852), 98; *Gen.* ii. 380, n. 409.—*Dicalymma* Leme, *Ill. hort.* ii. *Misc.* 37.—*Cosmophyllum* C. Koch et Bouch. *Ind. sem. H. berol.* (1854).

[2] Yellow; radial whitish.

[3] Like the wings of the fruit, anterior and posterior.

[4] With apple-like odour, generally tomentose beneath.

[5] Spec. 1, often cultivated. *P. eminens.*—*Ferdinanda eminens* Lag. *N. gen.* 31 (ex Sch. bip.). —*Podachænium alatum* Benth.—Walp. *Ann.* v. 230.—*Cosmophyllum cacaliæfolium* C. Koch et Bouch.—Walp. *Ann.* v. 219.

[6] *Mantiss.* 475.—J. *Gen.* 187.—Lamk, *Ill.* t. 668.—DC. *Prodr.* v. 620.—Endl. *Gen.* n. 2553. —B. H. *Gen.* ii. 380, n. 410.—*Acmella* Rich. *Pers. Enchir.* ii. 472.—*Athronia* Neck. *Elem.* i. 32.—*Mendesia* DC. *Prodr* v. 532.—Deless. *Ic. sel.* iv. t. 29.

[7] Whitish or yellow.

[8] Yellow or purplish.

base obtuse or minutely dentate. Style suddenly constricted near dilated base; branches rather long recurved, not appendiculate at dilated apex, papillose subpenicillate. Fruit compressed or 3-quetrous, oftener ciliate at margin; pappus aristæ 2, 3 subulate, setiform or 0.—Perennial or annual herbs; leaves opposite, entire or dentate; capitules generally stipitate, terminal, axilar or dichotomous; receptacle convex or often deeply conical, loaded with complicate pales encircling flowers and narrow at base; bracts of subcampanulate involucre sub-2-seriate; the outer membrano-herbaceous; the inner thinner, often dry at base. (*Warm reg of both worlds.*[1])

250? **Hymenostephium** Benth.[2]—Flowers 2-morphous; the radial neuter, 1-seriate; limb of ligulate corolla open, sometimes rather broad, entire or 2-dentate; the discal hermaphrodite fertile; limb of tubular corolla little expanded, shortly 5-fid. Anthers minutely auriculate at base. Style branches of discal flowers complanate above, shortly appendiculate. Discal fruit (rather small, black) compressed; margins rather obtuse or callose; the radial abortive; pappus pales or scales 2, sharp transparent, sometimes very small, sometimes alternating with 1, 2, smaller and transparent scales and fringed, or often 0.—Glabrous or canescent herbs or undershrubs; leaves opposite, entire or serrate; capitules (rather small) terminal corymbiform cymose; bracts of short campanulate involucre narrow acute striate few-seriate; the outer gradually smaller.[3] (*Mexico, North-Granada.*[4])

251? **Otopappus** Benth.[5]—"Flowers[6] all fertile, 2 morphous; the radial female, 1-seriate; limb of ligulate corolla open, scarcely dentate; the discal hermaphrodite; corolla tube short and limb long-cylindrical, shortly 5-fid. Anthers minutely and obtusely auriculate at base. Style branches linear, shortly and obtusely appendiculate. Fruit flat-compressed; alate at both or the inner angle; inner wing produced upwards and adnate to pappus; pappus paleaceous and obliquely auriculiform, coalite in a ring at base, at inner side more produced and lacero-dentate at margin.—A tall herb (?) or shrub (?) with minute appressed hairs;[7] leaves opposite petiolate ovately lanceolate, remotely serrate, penninerved; capitules (moderate) cymose in uppermost axils; cymes 3–5-headed shorter than leaf; bracts of short hemispherical involucre membrano-coriaceous, imbricate at base, few-seriate; the outer gradually smaller; receptacle rather convex loaded with complicate pales encircling hermaphrodite flowers." (*Centr. America.*[1])

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[1] Spec. about 40. Jacq. *Amer.* 212 (*Spilanthes*): *Ic. rar.* iii. 584; *H. vindob.* t. 135.—H. B. K. *Nov. gen. et sp.* iv. t. 370.—Wight, *Icon.* t. 1109.—Link et Ott. *Ic. pl. sel.* t. 49 (*Verbesina*).—Benth. *Fl. austral.* iii. 541.—Oliv. and Hiern, *Fl. trop. Afr.* iii. 383.—Griseb. *Fl. brit. W.-Ind.* 375.—Walp. *Rep.* ii. 621, 987; *Ann.* ii. 868; v. 228.

[2] *Gen.* ii. 382, 1234, n. 413; *Hook. Icon.* ser. 3, ii. 48, t. 1154.

[3] A genus very near *Verbesina*.

[4] Spec. 2.

[5] *Gen.* ii. 380, 1234, n. 408; *Hook. Icon.* t. 1153.

[6] Yellow.

[7] Turning black when dry.

252. **Salmea** DC.[2]—Flowers[3] hemaphrodite fertile, 1-morphous; tube of regular corolla[4] short or long; limb narrowly campanulate, 5-fid. Anthers minutely auriculate at base. Style branches linear obtusely appendiculate. Fruit compressed, alate or ciliate at narrow margin; aristæ of pappus 2, continuous with margins of fruit; marginal wings 1, 2, or 0; in addition sometimes ∞ small intermediate scales.—Erect or climbing shrubs; leaves opposite, petiolate, entire or dentate; capitules (small) in corymbiform much branched pyramidal cymes; bracts of short campanulate or subturbinate involucre imbricate appressed few-seriate; the outer often smaller; receptacle more or less long-conical and loaded with complicate pales surrounding flowers.[5] (*Antilles, Mexico, centr. America.*[6])

253. **Epallage** DC.[7]—Flowers[8] fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla narrow, entire or few-dentate; the discal hermaphrodite fertile; limb of tubular corolla cylindrical, 5-dentate. Anthers obtuse at base. Style branches of female flowers linear recurved; of hermaphrodite subterete or complanate obtuse. Fruit costate, 4–5-angled; pappus pales short unequal few entire or ciliately lacerate.—Herbs often low branched puberulous; leaves alternate, subentire, dentate, incised or pinnatifid; capitules[9] long-stipitate, solitary or loosely cymose few; bracts of subhemispherical involucre few-seriate, unequal; the outer broader, sometimes herbaceous; the inner narrower dry and gradually passing into complicate pales surrounding flowers and inserted on nearly flat receptacle. (*Madagascar.*[10])

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[1] Spec. 1. *O. verbesinoides* BENTH.

[2] *Cat. H. monspel.* 140; *Prodr.* v. 493.—LESS. *Syn.* 212.—ENDL. *Gen.* n. 2448.—B. H. *Gen.* ii. 381, n. 411.—*Hopkirkia* SPRENG. *N. Prov.* 23.

[3] Whitish or pale yellow.

[4] Sometimes recurved.

[5] *Salmeopsis* BENTH. *Gen.* ii. 381, n. 412, appears to us merely a (Brazilian) sect. of *Salmea*, with ∞ squamules added among the larger aristæ.

[6] Spec. 10–12. JACQ. F. *Ecl.* t. 139 (*Hopkirkia*).—CASS. *Dict.* xlvii. 87.—R. BR. *Trans. Linn. Soc.* xiii. 112.—GRISEB. *Fl. brit. W.-Ind.* 375; *Cat. pl. cub.* 155.—*Bot. Mag.* t. 2062.—WALP. *Rep.* vi. 145.

[7] *Prodr.* vi. 3 (part. not ENDL.).—B. H. *Gen* ii. 369, n. 389.

[8] Pale or whitish?

[9] Small or rather large.

[10] Spec. 2, 3. LESS. *Syn.* 221 (*Helicta*).

254. **Eleutheranthera** Poit.[1]—Flowers hermaphrodite fertile, the inmost sometimes sterile, 1- or rarely 2-morphous; the outer few ligulate. Corolla regular tubular; limb narrowly campanulate, 5-fid. Anthers mucronate at base, truncate at apex, not or slightly coherent at margins. Style branches elongate suberect acute, densely papillose. Fruit obpyramidal, 2–4-angled; ribs muricate or rugose; pappus cup-shaped unequally ciliate, contracted at base.—Puberulous slender-branched annuals; leaves opposite petiolate crenately dentate, scabrous above, pale beneath; capitules (small) terminal or in sessile or lateral dichotomies; bracts of involucre[2] small dissimilar; the inner thinner subtransparent, passing into complicate pales surrounding the flowers. (*Trop. America.*[3])

255? **Lorentzia** Griseb.[4]—"Flowers[5] 2-morphous; the outer sub-2-seriate female fertile; corolla ligulate; the discal hermaphrodite sterile; corolla tubular, 5-dentate. Anthers minute sagittate at base. Style branches of hermaphrodite flowers with a conical hispidulous appendage. Fruit obpyramidal thick, truncate at apex; the outer 3-angular; the inner 4-angular; pappus cup-shaped ciliate-dentate with sometimes a few longer hairs.—A scabrous annual; leaves opposite linear-lanceolate, entire or few-dentate, 3-plinerved; capitules terminal solitary; involucral bracts foliaceous, 1–2-seriate, passing into pales; outer pales longer than fruit subulate; the inner complicate and enfolding the flowers nervose-striate, membranous beneath." (*Extratrop. S. America.*[6])

256. **Axiniphyllum** Benth.[7]—Flowers[8] hermaphrodite fertile, 1-morphous; tube of regular corolla slender (sometimes long), suddenly dilated in a long cylindrical 5-fid limb. Anthers obtusely auriculate at base. Style branches thin long hirtellate, finally revolute, acutely appendiculate. Fruit 4-angular, incurved

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[1] Ex Bosc. *Nouv. Dict. Hist. nat. appl.* éd. 1, vii. (1803), 498.—A. Rich. *Dict. class.* vi. 124.—Cass. *Dict.* xxxv. 447.—B. H. *Gen.* ii. 371, 1234, n. 392.—*Ogiera* Cass. *Dict.* xxxv. 445 (not Spreng.).—DC. *Prodr.* v. 546.—Endl. *Gen.* n. 2500.—? *Fingalia* Schr. *Syll. pl. Ratisb.* i. 87 (ex B. H.).—*Kegelia* Sch. bip. *Linnæa*, xxi. 245.—*Chalarium* Poit. herb.

[2] Small, persistent.

[3] Spec. 1. *E. ovalifolia* Poit.—*Ogiera triplinervis* Cass.—*O. leiocarpa* Cass. *Dict.* xliii. 371.—*Siegesbeckia portoricensis* Bert.—*Kegelia ruderalis* Sch. bip.—*Wedelia discoidea* Schlechtl, *Linnæa* (1831), 728.—DC. *Prodr.* v. 543, n. 34 (sect. *Aglossa*).

[4] *Pl. Lorentz.* 135; *Symb. Fl. argent.* 189.—B. H. *Gen.* ii. 1234, n. 392 a.

[5] "Yellow."

[6] Spec. 1, unknown to us. *L. pascalioides* Griseb.

Hook. Icon. ser. 3, ii. 16, t. 1118; *Gen.* ii. 362, n. 369.

[8] "Yellow and pink" (Galeotti).

or straight; pappus 0.—Scabrous-puberulous herbs (sometimes rather viscid); leaves opposite hastately 3-lobed, alately narrowed at base; capitules[1] in loose terminal cymes; bracts of subcampanulate involucre unequal glandularly hispid, 2-seriate; the outer gradually smaller, finally reflexed; receptacle small nearly flat loaded with complicate pales enfolding the flowers. (*Mexico.*[2])

257? **Abasaloa** Llav. and Lex.[3]—"Flowers[4] fertile, 2-morphous; the radial ∞, female, 2–3-seriate; corolla ligulate capillary; the discal hermaphrodite fertile; corolla tubular, 4-dentate. Anthers . . . ? Style . . . ? Fruit rhomboidly 4-angular, crowned with umbilicate papillæ.—An erect herb dichotomously branched; leaves opposite, linear lanceolate serrately dentate rough; capitules in long pedunculate dichotomies; involucral bracts 12–16, 2-seriate; receptacle flat and loaded with linear ciliate-serrate pales."[5] (*Mexico.*[6])

258. **Eclipta** L.[7]—Flowers 2-morphous; the radial female fertile or sometimes sterile, 1–2-seriate; limb of ligulate corolla[8] narrow-elongate or rather large, entire or 2-dentate, sometimes with a narrow or linear lobed appendage; the discal hermaphrodite fertile; limb of regular corolla[9] little expanded, 4–5-dentate. Anthers obtuse or shortly mucronate at base. Style branches of radial flowers linear recurved; of the discal short or very short, sometimes obtusely or shortly 3-angularly appendiculate. Fruit unequally angled or obpyramidal (the radial narrower sub-3-quetrous and often vacuous) thinly granular, truncate at apex, smooth, ciliately denticulate, or crowned with a short 2–4-aristate or denticulate pappus, sometimes with a very short ring, entire or subentire.—Annual or perennial herbs, subglabrous, strigose or hirsute; leaves opposite or alternate, entire or dentate; capitules terminal or axillar pedunculate, solitary or 2–3-nately cymose; bracts of rather broad subovoid, hemispherical or broadly campanulate involucre foliaceous or herbaceous, sub-2-seriate, equal or subequal; the inner sometimes shorter or narrower; receptacle flat or convex, loaded with complicate pales passing externally

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[1] Moderate.

[2] Spec. 2.

[3] *Nov. veg. descr.* i. 11.—DC. *Prodr.* vii. 253.—B. H. *Gen.* ii. 362, n. 370.

[4] Concoloured, white.

[5] A genus unknown to us and very uncertain. An *Eclipta?*

[6] Spec. 1. *A. Taboada* Llav. et Lex. *loc. cit.*

[7] *Mantiss.* 157.—J. *Gen.* 187 (*Eclypta*).—Lamk, *Ill.* t. 687, fig. 1.—Gærtn. *Fruct.* ii. 441.—Less. *Syn.* 212.—DC. *Prodr.* v. 489.—Endl. *Gen.* n. 2446.—B. H. *Gen.* ii. 361, n. 366.—*Micrelium* Forsk. *Fl. æg.-arab.* 152.

[8] White or yellow.

[9] Yellow or fuscate.

into the bracts of the involucre, internally into very narrow linear bracteoles.[1] (*All warmer reg.*[2])

259. **Stemmatella** Wedd.[3]—Flowers[4] 2-morphous; the radial female fertile, sub-1-seriate; limb of ligulate corolla narrow scarcely longer than style or sometimes abortive subnil or 0; the discal hermaphrodite fertile, or the inmost sometimes sterile; tube of regular corolla short; limb campanulate, 5-dentate. Anthers minutely auriculate at base. Style branches of hermaphrodite flowers short thick rather obtuse; of female narrower more acute. Radial fruit unequally obovate glabrous (blackish); the discal cuneate oblong, 3–5-angled, alternate at base; pappus pales broadly membranous subtransparent ciliate, sub-2-seriately imbricate.—A dwarf highly branched glabrous or somewhat setose herb; leaves (small) opposite, entire or dentate; capitules (small) ∞, in contracted cymes; bracts of globularly campanulate involucre few imbricate, sub-2-seriate; the inner thinner and passing into pales encircling the fruit; receptacle narrow. (*Bolivia.*[5])

260. **Siegesbeckia** L.[6]—Flowers[7] 2-morphous; the radial female fertile, sub-1-seriate; limb of irregular corolla ligulate, open or reflexed, unequally 2-3-fid, sometimes unequally campanulate, 2–4-fid; the discal hermaphrodite fertile, or the inmost sterile; corolla tube short; limb campanulate, 3–5-fid or dentate. Anthers at base entire or minutely mucronate. Style branches of female flowers thin recurved; of hermaphrodite short thick, rather obtuse or acute, sometimes dentiform. Fruit unequally

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[1] Sections of the genus, with larger capitule, are:

Leptocarpha DC. *Prodr.* v. 495.—Endl. *Gen.* n. 2450.—B. H. *Gen.* ii. 361, n. 367: flowers ligulate, sub-1-seriate; ligules elongate entire; aristæ of fruit 2–4; leaves broader opposite or mostly alternate. (*Chili.*)

? *Gymnolomia* H. B. K. *Nov. gen. et spec.* iv. 217, t. 373, 374 (not Ker).—B. H. *Gen.* ii. 363, n. 375.—*Gymnopsis* DC. *Prodr.* v. 561 (part.).—Endl. *Gen.* n. 2520.—*Heliomeris* Nutt. *Journ. Acad. Phil.* ser. 2, i. 171: radial flowers sterile neutral, 1-seriate; radial fruit vacuous; discal subcompressed or 4-angled; pappus short denticulately ciliate or 0; leaves opposite or the upper alternate. (*Extratrop. N. and S. Amer.*)

[2] Spec. about 20. Jacq. *St.-amer.* t. 129 (*Bellis*).—Hook. and Arn. *Beech. Voy. Bot.* 435).—Remy, *C. Gay Fl. chil.* iv. 111; 116 (*Leptocarpha*).—Benth. *Pl. Hartweg.* 206 (*Andrieuxia*); *Fl. austral.* iii. 536.—F. Muell. *Pl. Vict.* t. 39.—A. Gray, *Proc. Amer. Acad.* v. 182 (*Gymnolomia*).—Boiss. *Fl. or.* iii. 249.—Chapm. *Fl. S. Unit. St.* 224.—Fr. et Sav. *Enum. pl. jap.* i. 230.—Harv. and Sond. *Fl. cap.* iii. 131.—Bak. *Fl. maur.* 169.—Oliv. and Hiern, *Fl. trop. Afr.* iii. 373.—Walp. *Rep.* ii. 855; vi. 160 (*Andrieuxia*); *Ann.* v. 220.

[3] *Bull. Soc. bot. de Fr.* xii. 82.—B. H. *Gen.* ii. 359, n. 362.

[4] Yellow.

[5] Spec. 1. *S. congesta* Wedd.

[6] *Gen.* n. 973.—J. *Gen.* 187.—DC. *Prodr.* v. 495, n. 1–7.—Endl. *Gen.* n. 2451.—B. H. *Gen.* ii. 359, n. 361.—*Schkuhria* Mœnch, *Meth.* 566 (not Roth).—*Trimeranthes* Cass. *Dict.* xlix. 115.—*Minyranthes* Turcz. *Bull. Mosc.* (1851), i. 180.—*Limnogenneton* Sch. bip. *Walp. Rep.* vi. 146.

[7] Yellow (or white ?).

obovoid-oblong, at back often gibbous or incurved or turgid glabrous, without pappus.—Herbs, often annual, erect or divaricately ramose, glabrous or glandular-pilose; leaves opposite, subentire or dentate; capitules stipitate loosely cymose; cymes often foliate; bracts of subhemispherical or shortly campanulate involucre unequal; the inner passing into pales enfolding the flowers; the outer few linear open, claviform at narrow apex; all or the outer more or less densely glandular-capitate; receptacle narrow. (*Trop. and subtrop. reg. of both worlds.*[1])

261? **Micractis** DC.[2]—"Flowers[3] 2-morphous; the radial *female; ligule very minute; the discal hermaphrodite; corolla* tubular, 4-dentate (the central perhaps sterile?). Anthers not *caudate. Radial styles 2-fid; the discal enclosed.* Fruit 4-angled compressed subobovate glabrous smooth.—An erect annual; leaves opposite oblong subcrenate, or the upper entire scabrous; capitules collected at ends of branches 3-nate shortly stipitate; involucral bracts oblong, 1–2-seriate; receptacle loaded with complicate pales half enclosing the fruit." (*Madagascar.*[4])

262. **Zaluzania** Pers.[5]—Flowers[6] fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla open rather broad, entire or few-dentate; the discal hermaphrodite; corolla tube[7] rather broad; limb narrow-campanulate, 5-fid or 5-dentate. Anthers entire or truncate at base. Style branches at dilated apex complanate, truncate or shortly and acutely appendiculate. Fruit 3–4-angular, without pappus, sometimes crowned with small very caducous scales.[8]—Shrubs undershrubs or rarely herbs, tomentose or scabrous; leaves alternate, entire, dentate, lobed or plurisected; capitules in corymbiform often foliate cymes; bracts of shortly subcampanulate involucre unequal, dry or herbaceous, few-seriate; receptacle more or less deeply conical and loaded with pales subtending or enfolding the hermaphrodite flowers. (*Mexico.*[9])

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[1] Lhér. *St. nov.* t. 19.—Pœpp. et Endl. *Nov. gen. et sp.* t. 256.—Wight, *Icon.* t. 1103.—Sweet. *Brit. fl. Gard.* t. 203.—*Bot. Reg.* t. 1061.—Walp. *Rep.* ii. 603; vi. 145.

[2] *Prodr.* v. 619.—Endl. *Gen.* n. 2552.—B. H. *Gen.* ii. 363, n. 373. [3] "Yellow, very small."

[4] Spec. 1, unknown to us. *M. Bojeri* DC. *loc. cit.*

[5] *Syn.* ii. 473.—Less. *Syn.* 224.—DC. *Prodr.* v. 553 (part.).—Endl. *Gen.* n. 2511.—B. H. *Gen.* ii. 362, n. 371.—*Ferdinanda* Lag. *Nov. gen. et spec.* 31.—DC. *Prodr.* v. 552.—Endl. *Gen.* n. 2509.—*Chrysophania* K. *Less. Syn.* 224.—DC. *Prodr.* v. 553.—Endl. *Gen.* n. 2510.—*Hybridella* Cass. *Dict.* xxii. 86.—*Chiliophyllum* DC. *Prodr.* v. 554.—Endl. *Gen.* n. 2512.

[6] Yellow or (?) white.

[7] Often dilated at base and sometimes decurrent on the top of the ovary.

[8] Piles apparently dilated.

[9] Spec. 6, 7. Jacq. *Hort. schœnbr.* t. 371 (*Anthemis*).—? Llav. et Lex. *Nov. veg. descr.* i. 30 (*Anthemis*).—Sch. bip. *Flora* (1861), 553; (1864), 215.

263. **Sabazia** Cass.[1]—Flowers[2] (nearly of *Zaluzania*) all fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla open rather broad, 2–3-dentate; the discal hermaphrodite; tube[3] short, limb campanulate, 5-dentate or fid. Style branches of hermaphrodite flowers rather thick and obtuse at apex, recurved; of female more slender. Fruit[4] obtusely 4–5-angular or subterete, bare or ciliate at apex, attenuate at base; basal callus more or less or scarcely oblique.—Branching herbs oftener rather villose; leaves opposite dentate; capitules[5] long-stipitate; receptacle more or less convex, loaded with lacerate or entire pales, or the inner sometimes linear; bracts of subcampanulate involucre 1–2-seriate, membranous or subscarious. (*Columbia, Mexico.*[6])

264? **Varilla** A. Gray.[7]—"Flowers[8] hermaphrodite fertile, 1-morphous; limb of tubular corolla narrow-campanulate, 5-fid. Anthers obtuse entire at base. Style branches flattened obtuse at apex. Fruit oblong subterete glabrous, ∞-costate, bare or crowned with setules (to 15).—Glabrous shrubs or undershrubs; leaves opposite, or the upper alternate, linear entire, sometimes fleshy; capitules long penduncolate at ends of twigs; bracts of campanulate involucre narrow few-seriate subequal; receptacle conical, loaded with rather rigid acute pales between the flowers."[9] (*Mexico.*[10])

265. **Enhydra** Lour.[11]—Flowers[12] 2-morphous; the radial female or rarely hermaphrodite, ∞-seriate; corolla short ligulate, 3–4-dentate at apex and oftener shorter than the style; the discal hermaphrodite fertile or partly sterile; corolla tubular-subcampanulate, 5-fid. Anthers entire at base. Style branches of hermaphrodite flowers obtuse, scarcely or not appendiculate,

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[1] *Dict.* xlvi. 480.—DC. *Prodr.* v. 496.—Endl. *Gen.* n. 2452.—B. H. *Gen.* ii. 362, n. 372.—*Baziasa* Steud. *Nom.* (ed. 2), 192.

[2] "White, pink or yellow."

[3] Externally at base in all flowers more or less densely hirsute, or sometimes sub-angular; angles minutely or rather long-ciliate.

[4] Turning black when mature.

[5] Smaller or moderate.

[6] Spec. 6, 7. H. B. K. *Nov. gen. et spec.* iv. t. 394 (*Eclipta*), 389 (*Wiborgia*). — ? Less. *Linnæa* (1830), 148.

[7] *Pl. Fendler. Mem. Am. Acad.* i. 106.—B. H. *Gen.* ii. 368, n. 374.

[8] "Yellow."

[9] A genus (unknown to us) "apparently allied in some respects to *Sabazia*, in others to *Perymenium*" (B. H.).

[10] Spec. 2, of which one is epappose. Walp. *Ann.* ii. 895; v. 249.

[11] *Fl. cochinch.* (1790), 510 (*Enydra*).—DC. *Prodr.* v. 636.—Endl. *Gen.* n. 2574.—B. H. *Gen.* ii. 360, n. 364.—*Meyera* Schreb. *Gen.* 570.—*Sobreira* R. et Pav. *Prodr. Fl. per.* 109, t. 23.—*Sobrya* Pers. *Syn.* ii. 473.—*Cryphiospermum* P. Beauv. *Fl. ow. et ben.* ii. 24, t. 74.—DC. *Prodr.* v. 497.—Endl. *Gen.* n. 2453.—*Wahlenbergia* Schum. et Thönn. *Beskr.* 387 (not of others).—*Tetractis* Reinw. *Bl. Bijdr.* 892.—*Hingtsha* Roxb. *Fl. ind.* iii. 448.

[12] Yellow (or whitish?).

sparsely hispidulous to apex. Fruit nearly straight or curved, not or scarcely angular, crowned with a thick hardened disk.[1]—Glabrous or hairy (marshy) herbs; leaves opposite, sessile, entire or dentate, often narrow; capitules (small) alternately axillar, sessile or very shortly stipitate; receptacle globular or conical; bracts of involucre 4, decussate foliaceous, broadly imbricate; each flower enclosed by a pale-like bract, very concave within, finally hardened and stiffened around fruit. (*All warm reg.*[2])

266. **Aphanactis** Wedd.[3]—Flowers[4] fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla erect or open, 2–3-dentate; tube more or less hirsute at base; the discal hermaphrodite; limb of tubular corolla narrow-campanulate, 5-dentate. Anthers minutely dentate at base. Style branches of hermaphrodite flowers short rather obtuse or very shortly appendiculate; of the female more slender recurved. Fruit oblong, obtuse-angled, without pappus.—Low or creeping herbs; leaves opposite oblong glabrous, 3-nerved; capitules terminal, sessile or stipitate; involucre shortly subcampanulate; bracts few; the outer oftener broader subfoliaceous; receptacle more or less convex and loaded with pales enclosing the flowers.[5] (*Andine America.*[6])

267. **Selloa** H. B. K.[7]—Flowers fertile, 2-morphous; the radial female, 1–2-seriate; limb of ligulate corolla[8] open, 2–5-dentate or subentire; the discal hermaphrodite; limb of tubular corolla cylindrical, 5-dentate. Anthers[9] entire or minutely dentate at base. Style branches of hermaphrodite flowers flattened at apex, scarcely or shortly appendiculate. Fruit oblong, 3–5-angled, crowned with minute hairs or scales, of which those at 3–5 angles are longer aristate, sometimes caducous.—Perennial herbs[10]; stem short thick or subnil; leaves basal rosulate, entire or pinnatisect; *in scape 0, or few small, opposite or alternate; capitules*

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[1] Corolla thickened at base (?).

[2] Spec. about 8. W. *Spec.* iii. 1797 (*Cæsulia*).—Miq. *Fl. ind.-bat.* ii. 83.—Benth. *Fl. austral.* iii. 546.—Oliv. and Hiern, *Fl. trop. Afr.* iii. 372.—Walp. *Ann.* ii. 871.

[3] *Chlor. andin.* i. 142, t. 37 A.—B. H. *Gen.* ii. 360, n. 365.

[4] Yellow.

[5] A genus in some points very near to *Selloa*, in others to *Jægeria*.

[6] Spec. 2.

[7] *Nov. gen. et spec.* iv. 265, t. 395.—DC. *Prodr.* v., 612.—Endl. *Gen.* n. 2549.—B. H. *Gen.* ii. 361, n. 368.—*Feæa* Spreng. *Syst.* iii. 362.—*Chromolepis* Benth. *Pl. Hartweg.* 40.

[8] Yellow or (?) violet.

[9] In discal flowers sometimes void.

[10] Apparently marshy; roots at bottom of stems sometimes multiplex rather thick and densely fascicled.

terminal solitary or few; bracts of subcampanulate involucre 2–3-seriate, unequal; the outer more broadly membranous; receptacle convex loaded with complicate pales enclosing flowers.[1] (*Mexico.*[2])

268. **Rumfordia** DC.[3]—Flowers fertile, 2-morphous; the radial female, 1–2-seriate; limb of ligulate corolla[4] broad open subparallel-nerved, entire or few-dentate; the discal hermaphrodite; limb of tubular corolla narrow-campanulate, 5-dentate. Anthers obtuse at base, truncate or shortly auriculate. Style branches of hermaphrodite flowers rather thick, obtuse or very shortly acutely appendiculate; of females slender short, revolute. Fruit[5] unequally obovate or dimidiately obcordate, thick gibbous at back, sometimes subangulate or rather compressed laterally, without pappus.—Glabrous shrubs; leaves opposite broad, contracted[6] at attenuated base, entire or serrately dentate; capitules[7] in a full terminal oppositely cymiferous raceme; involucre sub-2-seriate; outer bracts membranous; the inner stiffer and passing into complicate pales surrounding the flowers and enfolding the fruit; receptacle convex. (*Mexico.*[8])

269. **Monactis** H. B. K.[9]—Flowers[10] fertile, 2-morphous; the radial few, 1 or 0; limb of ligulate corolla rather broad, few-dentate[11]; the discal hermaphrodite; limb of tubular corolla narrow-campanulate, 5-dentate. Anthers shortly mucronate at base. Style branches of discal flowers short rather obtuse, not or scarcely appendiculate; the radial thinner recurved. Fruit subterete, glabrous or variously pilose without pappus.[12]—Trees or shrubs, variously clothed; leaves alternate, subentire, 3–5-nerved above base, scabrous above, tomentose beneath; capitules (small and few-flowered) in compound racemose and corymbiform terminal cymes; involucre oblong, subcylindrical or more or less broadly campanulate; bracts few imbricate; the inner enfolding the flowers. (*America.*[13])

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[1] A genus in some respects allied to *Wulffia*, in others to *Eclipta*, different however in habit.

[2] Spec. 2. Walp. *Rep.* vi. 171.

[3] *Prodr.* v. 549.—Endl. *Gen.* n. 2505.—B. H. *Gen.* ii. 359, n. 360.

[4] Pale yellow.

[5] Blackish, glabrous.

[6] Auriculate at base.

[7] Rather large, showy.

[8] Spec. 1, 2. Deless. *Ic. sel.* iv. t. 30.

[9] *Nov. gen. et spec.* iv. 286, t. 403.—Less. *Syn.* 211.—DC. *Prodr.* v. 546.—B. H. *Gen.* ii. 358, n. 359.

[10] Yellow.

[11] Or (?) entire (B. H.).

[12] "Or surrounded by very many squamellæ epappose" (B. H.).

[13] Spec. 1, 2. Spreng. *Syst.* iii. 591 (*Phætusa*).—*Monactis dubia* H. B. K. is *Astemma* Less.

270. **Jægeria** H. B. K.[1]—Flowers[2] fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla small, 2-dentate or entire; the discal hermaphrodite; limb of tubular corolla narrow-campanulate, 5-dentate; tube oftener hirsute at base. Style branches of hermaphrodite flowers narrow rather broad, sometimes very short; of female longer narrower recurved. Fruit 3–5-angled glabrous; basal callus oblique; pappus 0.—Glabrous or hispid annuals;[3] leaves opposite dentate; capitules terminal pedunculate; involucre shortly campanulate or hemispherical; bracts few, 1–2-seriate imbricate, herbaceous, or the inner membranous, passing into pales surrounding the flowers and enfolding the fruit; receptacle more or less deeply conical. (*Warm N. and S. America.*[4])

271. **Montanoa** Llav. and Lex.[5]—Flowers 2-morphous; the radial neuter, 1-seriate; limb of long-ligulate corolla[6] open, 2-dentate, 2-fid or subentire; the discal hermaphrodite (or the inmost sterile); corolla tubular, sometimes dilated at base; limb narrow-campanulate, 5-fid. Anthers obtuse at base. Style branches short- or rather long-appendiculate at thickened apex. Discal fruit compressed; the radial oftener 3-quetrous, obtuse, without pappus.—Shrubs or undershrubs; leaves opposite, entire, dentate or lobed, or the lower broadly pinnatilobed or pinnatifid; capitules in compound corymbiform cymes; bracts of hemispherical involucre imbricate, 1–2-seriate short herbaceous; receptacle more or less convex loaded with complicate pales surrounding the flowers and finally enclosing fruit, glabrous or villose. (*Warm N. and S. America.*[7])

272. **Sclerocarpus** Jacq.[8]—Flowers[9] 2-morphous; the radial neutral; limb of ligulate corolla (sometimes small) dentate or entire; the discal hermaphrodite fertile; limb of tubular corolla narrow-

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[1] *Nov. gen. et spec.* iv. 277, t. 400.—DC. *Prodr.* v. 543.—Endl. *Gen.* n. 2497.—B. H. *Gen.* ii. 360, n. 363.—*Macella* C. Koch, *Ind. sem. H. berol.* (1855), *App.*

[2] Yellow (or white?).

[3] Sometimes very slender.

[4] Spec. 5, 6. Walp. *Rep.* ii. 609; *Ann.* i. 413.

[5] *Nov. veg. descr.* ii. 11.—B. H. *Gen.* ii. 364, n. 377.—*Eriocoma* H. B. K. *Nov. gen. et spec.* iv. 267, t. 396 (not Nutt.).—*Eriocarpha* Cass. *Dict.* lix. 236.—*Montagnæa* DC. *Prodr.* v. 564.—Endl. *Gen.* n. 2522.—? *Pristleya* Sess. et Moc. *Fl. mex. ined.* (ex DC.).—*Uhdea* K. *Ind. sem. H. berol.* (1847).

[6] White or pink.

[7] Spec. 12–14. Sweet, *Brit. fl. Gard.* ser. 2, t. 44 (*Eriocoma*).—Ad. Br. *Rev. hort.* (1857), fig. 165.—Walp. *Rep.* ii. 612; *Ann.* i. 412 (*Uhdea*); v. 221 (*Montagnæa*).

[8] *Ic. rar.* t. 176.—Jacq. f. *Act. helv.* 34, t. 2. —DC. *Prodr.* v. 566.—Cass. *Dict.* xlviii. 148.—Endl. *Gen.* n. 2523.—B. H. *Gen.* ii. 364, n. 376. —*Aldama* Llav. et Lex. *Nov. veg. descr.* i. 14.—Less. *Syn.* 227.—*Dichotoma* Sch. bip. (ex B. H.).

[9] Yellow.

campanulate, 3–5-dentate or fid. Anthers dentate or shortly auriculate at base. Style branches more or less dilated or thickened, sometimes rather acute. Fruit obovoid, attenuate at base, rather compressed glabrous; pappus 0 or minute annular or ciliate.—Annual or perennial herbs; leaves alternate or opposite,[1] entire or dentate, often strigose; capitules terminal opposite leaves stipitate; bracts of shortly campanulate involucre 2-seriate imbricate unequal; the outer few (1–6), sometimes broader open; the inner passing into pales inserted on variously convex receptacle, surrounding the flowers and finally hardened and closed, sometimes attenuated above and falling with the enclosed fruit. (*All*[2] *warm reg.*[3])

273. **Tetragonotheca** DILL.[4]—Flowers[5] fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla open subentire or few-dentate; the discal hermaphrodite; limb of tubular corolla cylindrical, 5-fid or dentate. Anthers scarcely or shortly 2-dentate at base. Style branches long and acutely appendiculate, papillosely hirtuse above. Fruit 4-angled, sometimes rather compressed; pappus 0 or consisting of few or ∞ squamules.—Glabrous or variously clothed herbs; leaves opposite, often amplexicaul at narrowed base, dentate or incised or pinnatifid; capitules[6] stipitate, solitary or loosely corymbiform cymose; bracts of open involucre 4, connate at base, membranous herbaceous; receptacle more or less convex and loaded with pales enfolding hermaphrodite flowers. (*N. America.*[7])

274. **Scalesia** ARN.—Flowers[8] 1- or rarely 2-morphous (the outer few ligulate neutral), hermaphrodite fertile; limb of tubular corolla cylindrical, 5-fid. Anthers muticous or shortly dentate at obtuse base. Style branches short- or rather long-appendiculate. Fruit rather compressed; at apex obtuse bare or crowned with an

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[1] In the same plant.

[2] Australia hitherto excepted.

[3] DC. *Prodr.* v. 561, n. 1, 2; vii. 289 (*Gymnopsis*).—HOOK. *Icon.* t. 145 (*Gymnopsis*).—OLIV. and HIERN, *Fl. trop. Afr.* iii. 373.—SCH. BIP. *Schweinf. Fl. æth.* 150 (*Guizotia*).—KLATT, *Ann. sc. nat.* sér. 5, xviii. 371.—WALP. *Rep.* vi. 160 (*Aldama*).

[4] *H. eltham.* 378.—L. *Gen.* n. 976.—CASS. *Dict.* lix. 319.—LESS. *Syn.* 420.—DC. *Prodr.* v. 552.—ENDL. *Gen.* n. 2508.—B. H. *Gen.* ii. 367, n. 382.—*Halea* TORR. et GRAY, *Fl. N.-Amer.* ii. 304.—*Tetragonosperma* SCHEELE, *Linnæa*, xxii. 166.

[5] "Yellow."

[6] Rather large or moderate.

[7] Spec. 3. A. GRAY, *Pl. Fendler.* 83.—WALP. *Rep.* vi. 158; *Ann.* ii. 854 (*Halea*).

[8] *Lindl. Introd. Nat. Syst.* ed. 2, 443.—DC. *Prodr.* vii. 308.—ENDL. *Gen.* 409 (post n. 2512).—B. H. *Gen.* ii. 367, n. 384.

[9] Yellow (?).

entire, dentate or pinnatisect; capitules[1] solitary or loosely few-cymose, long stipitate; bracts of hemispherical involucre imbricate in few series, more or less herbaceous; receptacle elongate, conical, columnar or more rarely slightly convex, loaded with flat or oftener complicate pales surrounding flowers.[2] (*N. America.*[3])

277. **Zinnia** L.[4]—Flowers fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla[5] entire[6]; tube narrow or 0; the discal hermaphrodite; limb of tubular corolla[7] little expanded, 5-dentate. Anthers entire at base. Style branches rather long and compressed recurved, obtuse or truncate at apex, not or scarcely appendiculate. Fruit compressed, 2–3-quetrous striated; angles produced in teeth or 1–3 aristæ; pappus in the outer fruit small or 0.—Annual or perennial herbs, sometimes sub-shrubby; leaves opposite entire; capitules[8] terminal stipitate; peduncle oftener thickened to apex; receptacle convex or more or less deeply conical, more rarely nearly flat, loaded with complicate pales surrounding fruit; involucre ovoid, cylindrical or subcampanulate; bracts imbricate, 3-∞-seriate, obtuse dry, oftener marginate; the outer smaller.[9] (*Mexico.*[10])

278? **Sanvitalia** Gualt.[11]—Flowers (nearly of *Zinnia*[12]) fertile, 2-morphous; the radial female ligulate, 1–2-seriate; limb of ligulate corolla[13] open entire, persistent; the discal hermaphrodite;

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[1] Large, showy or moderate.

[2] An anomalous sect. of the genus apparently is *Iostephane* Benth. *Gen.* ii. 368, n. 386: receptacle slightly convex; radial flowers violet (?); leaves basal crowded.

[3] Spec. 20–25. Cav. *Icon.* t. 252; 268 (*Coreopsis*).—Jacq. *Ic. rar.* t. 592.—Sm. *Ex. Bot.* t. 38.—Vent. *Jard. Cels*, t. 71.—Sweet, *Brit. fl. Gard.* t. 4, 82, 146; ser. 2, t. 32 (*Echinacea*).—Maund, *Bot.* t. 201 (*Obeliscaria*).—Torr. et Gr. *Fl. N.-Amer.* ii. 307.—Chapm. *Fl. S. Unit. St.* 226.—A. Gray, *Man.* (1856), 214; *Proc. Amer. Acad.* vii. 357.—*Fl. serr.* t. 1213 (*Obeliscaria*).—*Bot. Reg.* t. 525; (1838), t. 27 (*Echinacea*).—*Bot. Mag.* t. 2, 1601, 1996, 2310; 5281 (*Echinacea*).—Walp. *Rep.* ii. 611, 977; vi. 159; *Ann.* ii. 854.

[4] *Gen.* n. 974.—J. *Gen.* 188.—Gærtn. *Fruct.* ii. 459.—Less. *Syn.* 224.—DC. *Prodr.* v. 534.—Endl. *Gen.* n. 2493.—B. H. *Gen.* ii. 357, n. 355.—*Diplothrix* DC. *Prodr.* v. 611.—*Sanvitaliopsis* Sch. bip. *Pl. Liebm.* (ex B. H.).

[5] Pink, purplish, golden or yellow.

[6] Sometimes abortive.

[7] Yellow or varied.

[8] Large or moderate, showy.

[9] *Tragoceros* H. B. K. *Nov. gen. et spec.* iv. 248, t. 385.—B. H. *Gen.* ii. 356, n. 353.—*Tragoceras* Less. *Syn.* 220.—DC. *Prodr.* v. 533.—Endl. *Gen.* n. 2491, is, in our view, a sect. of *Zinnia*, capitules small; receptacle nearly flat; discal flowers in part sterile; style of discal flowers subentire or shortly 2-lobed.

[10] Spec. 12–14. Cav. *Ic.* t. 81, 251.—Jacq. *Ic. rar.* iii. t. 589, 590.—Andr. *Bot. Rep.* t. 55, 189.—Regl, *Gartenfl.* t. 390.—A. Gray, *Pl. Wright.* i. 105, t. 10.—Emor. *Rec. Calif.* t. 4.—*Bot. Reg.* t. 1294.—*Bot. Mag.* t. 149, 527, 555, 2123.—Walp. *Rep.* ii. 608; *Ann.* ii. 852; v. 216.

[11] *Lamk Journ. Hist. nat.* ii. 176, t. 33.—Lamk, *Ill.* t. 686.—Less. *Syn.* 232.—DC. *Prodr.* v. 628.—Endl. *Gen.* n. 2556.—B. H. *Gen.* ii. 357, n. 356.—*Lorentea* Orteg. *Decad.* iv. 42, t. 5 (not Less.).—? *Anaitis* DC. *Prodr.* v. 628.—Endl. *Gen.* n. 2557.

[12] Of which perhaps rather a sect. (?).

[13] Yellow or whitish.

limb of tubular corolla[1] expanded, 5-dentate. Fruit thick or 3-quetrous, glabrous or tuberculate; pappus 0, or consisting of 1, 2 short aristæ; the inner sometimes alate. Other characters of *Zinnia*.—Annual or perennial herbs, sometimes subshrubby at base, low or diffuse; leaves opposite entire; capitules terminal stipitate; receptacle flat or convex, loaded with membranous or scarious concave or complicate pales between the flowers; bracts of hemispherical or broadly campanulate involucre in few series, dry or herbaceous at apex; the outermost sometimes few foliaceous open. (*Mexico.*[2])

279? **Philactis** SCHRAD.[3]—"Flowers 2-morphous; the radial female fertile, 1-seriate; limb of ligulate corolla large, 3-dentate, persistent; the discal hermaphrodite sterile; corolla regular glandular without. Anthers entire at base. Style branches of hermaphrodite flowers shortly appendiculate. Radial fruit obpyramidal, 3-angular, crowned externally with persistent ligule, within thickly aristate; the discal (abortive) unequally 4-aristate. —Dichotomous herbs, subshrubby at base; leaves opposite ovate serrate adpressedly villose, 3–5-plinerved; capitules in short pedunculate dichotomies; receptacle conical, loaded with complicate pales surrounding discal flowers; bracts of campanulate involucre imbricate, 2-seriate."[4] (*Mexico.*[5])

280. **Heliopsis** PERS.[6]— Flowers[7] 2-morphous; the radial female, fertile or sterile, 1-seriate; limb of ligulate corolla open sessile entire; the discal hermaphrodite fertile or sterile; limb of regular corolla cylindrical, 5-dentate. Anthers entire at base or minutely dentate. Style branches obtuse hirsute or shortly appendiculate. Fruit subterete or obtusely 3–4-angular; pappus 0. —Perennial herbs, branched or marshy radicant; leaves opposite, or the uppermost alternate, petiolate or amplexicaul, often 3-nerved, generally dentate; capitules solitary or few loosely cymose; receptacle longer or shorter conical and loaded with pales surrounding and enclosing the flowers; bracts of hemi-

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[1] Purplish or blackish.

[2] Spec. 3, 4. CAV. *Icon.* t. 351.—*Bot. Reg.* t. 707.—WALP. *Ann.* ii. 869.

[3] *Ind. sem. Hort. gœtt.* (1831).—DC. *Prodr.* v. 534.—ENDL. *Gen.* n. 2492.—B. H. *Gen.* ii. 356, n. 354.

[4] A genus (quite unknown to us) perhaps to be referred to *Zinnia.*

[5] Spec. 1. *P. zinnioides* SCHRAD.

[6] *Syn.* ii. 473.—LESS. *Syn.* 223.—DC. *Prodr.* v. 550 (part.).—ENDL. *Gen.* n. 2506.—B. H. *Gen.* ii. 358, n. 357.—*Kallias* CASS. *Dict.* xxiv. 326; xlvi. 406.—*Andrieuxia* DC. *Prodr.* v. 559; *Deless. Ic. sel.* iv. t. 31.—ENDL. *Gen.* n. 2517.

[7] Yellow.

spherical or broadly campanulate involucre imbricate, in 1 or few series herbaceous.[1] (*Warm N. and S. America.*[2])

281. **Bidens** T.[3]—Flowers 2-morphous; the radial fertile, sterile or 0; limb of ligulate corolla[4] entire or few-dentate open; the discal hermaphrodite fertile (or the inmost sterile); limb of regular tubular corolla[5] cylindrical or narrow-campanulate, 5-dentate or fid. Anthers entire at base or minutely auriculate or dentate. Style branches of hermaphrodite flowers[6] truncate at apex, sometimes hirsute above or oftener shorter or longer appendiculate. Fruit oblong, obovate or linear, more or less dorsally compressed or 3–4-angular, truncate rotundate or oftener attenuate or rostrate at apex, crowned with 2–4 aristæ, bare, ciliate above or oftener retrorsely barbellate or aculeate, sometimes short dentiform, or more rarely calvous.—Annual or perennial herbs (rarely odorous), sometimes shrubby or climbing or drooping, glabrous or variously clothed; root sometimes manyfold tuberous; leaves opposite or rarely alternate, entire, dentate, lobed or 1, 2 or 3 ternately or pinnately dissected; capitules[7] solitary, long or more rarely short pedunculate or in corymbiform cymes, terminal; bracts of various involucre generally 2-seriate, imbricate, sometimes connate at base; the inner often membranous; the outer[8]

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[1] A sect. of the genus is *Aganippea* Sess. et Moc. ex DC. *Prodr.* vi. 3.—Endl. *Gen.* 503.—B. H. *Gen.* ii. 358.—*Heliogenes* Benth. *Pl. Hartweg.* 42: stem marshy radicant; leaves amplexicaul.

[2] Spec. 4. Lhér. *Stirp.* t. 45 (*Buphthalmum*).—Dun. *Mém. Mus.* v. t. 8.—Hook. *Icon.* t. 1117.—*Bot. Reg.* t. 592.—*Bot. Mag.* t. 3372.—Walp. *Rep.* ii. 610, 633 (*Heliogenes*); *Ann.* v. 218.

[3] *Inst.* 462, t. 262.—L. *Gen.* n. 932.—J. *Gen.* 188.—Lamk, *Dict.* i. 413; Suppl. i. 629; *Ill.* t. 668.—Gærtn. *Fruct.* ii. 412, t. 167.—Cass. *Dict.* xxiv. 397, 402; li. 473; lix. 321, 328, 329.—DC. *Prodr.* v. 594.—Endl. *Gen.* n. 2541.—B. H. *Gen.* ii. 387, n. 428—*Kernoria* Mœnch, *Meth.* 595.—*Ceratocephalus* Vaill. (ex Rich.).—*Pluridens* Neck. *Elem.* i. 86.—*Edwarsia* Neck. *loc. cit.* 87.—*Delucia* DC. *Prodr.* v. 633.—Delëss. *Ic. sel.* iv. t. 40.—*Adenolepis* Less. *Linnæa*, vi. 510.—DC. *Prodr.* v. 607.

[4] Yellow, white, pink, purple, violet or rarely purplish.

[5] Yellow or purplish.

[6] Perfect in the radial of *Delucia*.

[7] Often rather large or large, sometimes showy.

[8] Sections of this genus are:

Glossogyne Cass. *Dict.* li. 475.—DC. *Prodr.* v. 632.—Endl. *Gen.* n. 2566.—B. H. *Gen.* ii. 388, n. 430.—*Gynàctis* Cass. *loc. cit.*—*Diodontium* F. Muell. *Hook. Kew Journ.* ix. 19: radial flowers fertile or 0; style branches long-hirsute-appendiculate; stem herbaceous; leaves basal, dissected or 3-dentate. (*Asia and trop. Oceania.*)

Thelesperma Less. *Linnæa*, vi. 511; *Syn.* 234.—DC. *Prodr.* v. 633.—Endl. *Gen.* n. 2569.—B. H. *Gen.* ii. 387, n. 426.—*Cosmidium* Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 361: radial flowers sterile or 0; involucral bracts more highly connate; stem herbaceous; leaves opposite and alternate glabrous, dissected or filiform. (*Extratrop. N. and S. Amer.*)

Cosmos Cav. *Icon.* i. 9, t. 14, 79.—DC. *Prodr.* v. 606; vii. 291.—Endl. *Gen.* n. 2542.—B. H. *Gen.* ii. 387, n. 427.—*Cosmea* W. *Spec.* iii. 2250: radial flowers sterile (corolla oftener red); fruit attenuate or rostrate at apex; stem herbaceous; leaves opposite, entire, dentate, lobed or dissected; capitules long-stipitate. (*Trop. Amer.*)

Coreopsis L. *Gen.* n. 981.—DC. *Prodr.* v. 570.—Endl. *Gen.* n. 2529.—B. H. *Gen.* ii. 385, n. 423.—*Acispermum* Neck. *Elem.* i. 34.—

generally herbaceous or sometimes foliaceous, entire or variously incised. (*All warm and temp. reg.*[1])

282 ? **Coreocarpus** BENTH.[2]—Flowers[3] 2-morphous; the radial female, 1-seriate; corolla ligulate subentire; the discal hermaphrodite; corolla narrow-campanulate. Style branches rather broad, short or rather long appendiculate. "Fruit dorsally compressed plano-concave, crowned with two short teeth, or with 2 retrorsely setulous aristæ or bare, girt with a rugose callose

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Leachia CASS. *Dict.* xxv. 388.—*Coreopsides* MŒNCH, *Meth.* 594.—*Chrysomelea* TAUSCH, *H. canal.* fig.—*Anacis* SCHR. *D. Akad. Mun.* v. 5. —*Campylotheca* CASS. *Dict.* li. 476.—DC. *Prodr.* v. 593.—ENDL. *Gen.* n. 2540.—*Dolicotheca* CASS. *loc. cit.*—? *Peramibus* RAFIN. *Ann. nat.* i. (1820), 14 (ex DC. *Prodr.* v. 568).—*Leptosyne* DC. *Prodr.* v. 531.—ENDL. *Gen.* n. 2488.—*Electra* DC. *Prodr.* v. 630.—ENDL. *Gen.* n. 2561.—*Chrysostemma* LESS. *Syn.* 227.—DC. *Prodr.* v. 567.—*Diodonta* NUTT. *Trans. Amer. Phil. Soc.* ser. 2, vii. 360.—*Calliopsis* REICHB. *Icon. et descr. pl.* t. 70 (not SWEET).—DC. *Prodr.* v. 568.—ENDL. *Gen.* n. 2527.—? *Diplosastera* TAUSCH, *H. canal.* t. 4.—*Tuckermannia* NUTT. *Trans. Amer. Phil. Soc.* ser. 2, vii. 363.—*Agarista* DC. *Prodr.* v. 569.—ENDL. *Gen.* n. 2528.—*Pugiopappus* TORR. *Whippl. Exp. Bot.* 48.—A. GRAY, *Proc. Amer. Acad.* vi. 545. —*Epilepis* BENTH. *Pl. Hartweg.* 17.—*Prestinaria* SCH. BIP. *Walp. Rep.* vi. 162: radial flowers fertile, sterile or 0; style branches truncate or penicillate, shortly or not appendiculate; fruit flat, sometimes alate or ciliate at margins, obtuse or sometimes contracted at apex; pappus 0 or consisting of 2 short, sometimes hirsute aristæ. (*Warm N. and S. Amer., trop. Africa.*)

Dahlia CAV. *Icon.* i. 56, t. 80; iii. t. 265, 266 (not THUNB.).—DC. *Prodr.* v. 494.—ENDL. *Gen.* n. 2449.—B. H. *Gen.* ii. 386, n. 424.—*Georgina* W. *Spec.* iii. 2124: radial flowers fertile or oftener sterile; ligules variegated; style branches long-hirsute-appendiculate; fruit flat compressed, bare at apex or crowned with 2 short dentiform aristæ; stem herbaceous or shrubby; leaves opposite, 1-2-3-bipinnatipartite; capitules long-stipitate, large or moderate; inner bracts of involucre and inner pales membranous, sometimes transparent. (*Extratrop. and And. N. S. and centr. America.*)

[1] Spec. about 130, JACQ. *H. schœnbr.* t. 373, 374 (*Coreopsis*); *Ic. rar.* t. 595 (*Coreopsis*).—SALISB. *Par. lond.* t. 16, 19.—SM. *Spicil. pl.* t. 22 (*Coreopsis*).—H. B. K. *Nov. gen. et spec.* t. 381; 382 (*Cosmos*).—PŒPP. et ENDL. *Nov. gen. et spec.* t. 255.—LINK et OTT. *Ic. pl. sel.* t. 33 (*Coreopsis*).—TORR. *Fl. N.-York*, t. 58.—A. GRAY, *Man.* (ed. 1856), 219 (*Coreopsis*), 221; *Proc. Amer. Acad.* v. 127; vii. 258 (*Leptosyne*); *Emor. Rep.* 90 (*Thelesperma*), 91; 92, t. 31 (*Leptosyne*).—CHAPM. *Fl. S. Unit. St.* 233 (*Coreopsis*), 236.—HOOK. F. *Journ. Linn. Soc.* vii. 200 (*Verbesina*).—SWEET, *Brit. fl. Gard.* t. 10, 72, 175 (*Coreopsis*), 237.—WEDD. *Chl. andin.* i. 71 (*Coreopsis*).—HARV. and SOND. *Fl. cap.* iii. 133.—BENTH. *Fl. austral.* iii. 542; 544 (*Glossogyne*).—REMY, *C. Gay Fl. chil.* iii. 114 (*Dahlia*).—GRISEB. *Fl. brit. W.-Ind.* 373.—MIQ. *Fl. ind.-bat.* ii. 76.—OLIV. and HIERN, *Fl. trop. Afr.* iii. 387 (*Coreopsis*), 392.—HOOK. F. *Handb. N.-Zeal. Fl.* 138.—FR. et SAV. *Enum. pl. jap.* i. 232.—BAK. *Fl. maur.* 169.—LABILL. *Sert. austro-caled.* t. 45.—BOISS. *Fl. or.* iii. 250. —REICHB. *Ic. Fl. germ.* t. 941, 942.—WILLK. et LGE, *Prodr. Fl. hisp.* ii. 49 (*Calliopsis, Dahlia*), 50.—GREN. et GODR. *Fr. de Fr.* ii. 168.—MAUND, *Bot.* t. 88, 161 (*Dahlia*).—KNOWL. et WESTC. *Fl. Cab.* t. 118, 127 (*Dahlia*). —ANDR. *Bot. Repos.* t. 408, 483 (*Dahlia*).—*Fl. serr.* t. 1321 (*Cosmidium*).—*Bot. Reg.* t. 7; 55 (*Dahlia*), 846 (*Coreopsis*), 684; 1228, 1376 (*Coreopsis*), 2007 (*Cosmos*); (1838), t. 15 (*Cosmos*); (1840), t. 29 (*Dahlia*).—*Bot. Mag.* t. 156 (*Coreopsis*); 762, 1885; (*Dahlia*), 2451, 2512 (*Coreopsis*), 3155; 3460, 3474, 3484, 3586 (*Coreopsis*), 3878 (*Dahlia*), 5227 (*Cosmos*), 5813 (*Dahlia*); 6241, 6419, 6462 (*Coreopsis*).—WALP. *Rep.* ii. 613 (*Calliopsis, Coreopsis*), 615 (*Cosmidium, Tuckermannia, Leighia*), 618; 619 (*Cosmos*), 979 (*Coreopsis*), 986; v. 221 (*Coreopsis*); vi. 162 (*Coreopsis*), 164 (*Cosmidium*), 165 (*Leighia*), 167; 168 (*Cosmos*), 721 (*Cosmos*); *Ann.* ii. 857 (*Coreopsis*), 858 (*Cosmidium*), 866; 869 (*Glossogyne*), 870 (*Thelesperma*); v. 221 (*Coreopsis*), 224; 225 (*Cosmos*), 230 (*Thelesperma*).

[2] *Sulph. Bot.* 28, t. 16.—B. H. *Gen.* ii. 384, n. 422.—*Acoma* BENTH. *loc. cit.* 29, t. 17.

[3] "Yellow (or white ?)."

margin; the inner narrower."—Herbs or undershrubs; leaves opposite or pinnatisect lobately incised; capitules terminal or loosely cymose; bracts of duplex involucre unequal; the inner concave and graduating into narrow pales surrounding flowers. (*California.*[1])

283? **Hidalgoa** LLAV. and LEX.[2]—"Flowers[3] sterile 2-morphous;[4] the radial fertile; fruit very large compressed, crowned with two inflexed horns; the discal hermaphrodite; style undivided. Other characters of *Dahlia.*—Glabrous shrubs (?); stem herbaceous climbing; leaves opposite petiolate, 3-nately divided; folioles ovate serrate petiolulate; the lateral often 2-partite; capitules axillar solitary, long-pedunculate; involucre duplex; receptacle loaded with membranous pales subtending the flowers." (*Mexico, Guayaquil.*[5])

284. **Glossocardia** CASS.[6]—Flowers[7] (nearly of *Bidens*) 2-morphous; the radial female (few); the discal hermaphrodite; all fertile. Radial corollas ligulate, 2-dentate or fid; the discal tubular-campanulate. Style branches 2, in discal flowers with linear subulate and hirtellate appendages. Fruit oblong ciliate and crowned with two straight finally recurved lateral aristæ.—A glabrous diffuse annual; leaves alternate, 2–3-pinnatisect; capitules axillar and terminal pedunculate; receptacle nearly flat; involucral bracts few; the outer 1–3, small, the inner larger 3–6, membranous striate, imbricate; the inner flowers mostly axillar to flat pales. (*E. India.*[8])

285? **Heterosperma** CAV.[9]—Flowers[10] (nearly of *Bidens*), 2-morphous; fruit 2-morphous; the inner (or sometimes all?) crowned with two retrorsely hirsute aristæ; the outer often rounded and bare at apex, sometimes gradually to the inner more attenuate or rostrate, dorsally compressed or more or less broadly alate at margin. Other characters of *Bidens*.[1]—Annuals; leaves opposite, dentate or 3-nately or pinnately dissected; capitules small axillar or oftener terminal; bracts of ovoid or oblong involucre few, free or connate at base, 2-morphous; receptacle loaded with membranous pales. (*Warm west. N. and S. America.*[2])

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[1] Spec. 2. A. GRAY, *Proc. Amer. Acad.* v. 162.—WALP. *Rep.* vi. 156; 170 (*Acoma*).

[2] *Nov. veg. descr.* i. 15.—LESS. *Linnæa*, vi. 406; *Syn.* 213.—DC. *Prodr.* v. 511.—ENDL. *Gen.* n. 2473.—B. H. *Gen.* ii. 386, n. 425.

[3] "Radial golden or cochineal; discal yellow."

[4] Nearly of *Bidens*, sect. *Dahlia*, apparently from description.

[5] Spec. said to be 2.

[6] *Dict.* xix. 62.—LESS. *Syn.* 233.—DC. *Prodr.* v. 631.—ENDL. *Gen.* n. 2564.—B. H. *Gen.* ii. 384, n. 420.

[7] Yellow.

[8] WIGHT, *Icon.* t. 1110.

[9] *Icon.* iii. 34, t. 267.—*Heterospermum* W. *Spec.* iii. 2129.—DC. *Prodr.* v. 632.—ENDL. *Gen.* n. 2565.—B. H. *Gen.* ii. 383, n. 419.—? *Microdonta* NUTT. *Trans. Amer. Phil. Soc.* ser. 2, vii. 369.

[10] Yellow.

286. **Narvalina** Cass.[3]—Flowers[4] (nearly of *Bidens*) fertile, 2-morphous; radial 1–3, female; limb of ligulate corolla patent, 2-dentate; discal hermaphrodite few regular. Anthers obtusely sagittate-auriculate at base. Style branches of hermaphrodite flowers flattened lanceolate-appendiculate; of female flowers narrower recurved. Fruit membrano-marginate ciliate, crowned with two retrorsely hispid (deciduous) aristæ. Other characters of *Bidens*.—A glabrous shrub; leaves opposite petiolate, acutely dentate; capitules in corymbiform cymes; bracts of oblong involucre few, stiff, 2–3-seriate; receptacle nearly flat and loaded with nearly flat pales between the flowers. (*Hispaniola.*[5])

287. **Chrysanthellum** Rich.[6]—Flowers[7] fertile, 2-morphous; the radial female, 1-seriate, sometimes few; limb of ligulate corolla open, entire or 2-dentate; the discal hermaphrodite; limb of tubular corolla narrow-campanulate, 5-dentate. Anthers obtuse at base. Style branches of hermaphrodite flowers long or short appendiculate. Fruit oblong, more or less dorsally compressed; the outer thicker obtuse-margined, crowned with a short ring or small cupular pappus, entire or ciliolate.—Branching annuals,[8] glabrous or hispidulous; leaves opposite or alternate, sometimes rosulate at base, 1–2-sect, or partly incised-dentate; capitules terminal or in upper axils pedunculate, solitary or loosely corymbiform cymose; bracts of short-campanulate involucre 1–2-

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[1] Of which perhaps rather a sect.

[2] Spec. 4, 5, H. B. K. *Nov. gen. et spec.* iv. 245, t. 383, 384.—A. Gray, *Proc. Amer. Acad.* v. 162.

[3] *Dict.* xxxviii. 17.—Less. *Syn.* 234.—DC. *Prodr.* v. 633.—Endl. *Gen.* n. 2568.—B. H. *Gen.* ii. 388, n. 429.

[4] Yellow.

[5] Spec. 1, sometimes cultivated in gardens, somewhat variable. *N. domingensis* Css . — *tia domingensis* Cass.

s. *Syn.* ii. 471.—Less. *Syn.* 234.—Cass. *Dict. sc. nat.* ix., 150.—DC. *Prodr.* v. 630.—Endl. *Gen.* n. 2562.—B. H. *Gen.* ii. 389, n. 432.—*Collæa* Spreng. *Syst.* iii. 622.—*Sebastiana* Bertol. *Opusc.* (1822), 37.—*Chrysanthellina* Cass. *Dict.* ix. 150; xxv. 391.—Less. *Syn.* 234.—*Adenospermum* Hook. and Arn. *Hook. Journ. of Bot.* iii. 318.—*Hinterhubera* Sch. bip. *Koch. pl. nub.* n. 175 (not *Wedd. Chl. andin.* i. 185, t. 390).

[7] Yellow or whitish.

[8] Or occasionally (?) perennial.

seriate; receptacle flat loaded with pales subtending flowers, the inner narrower, linear (or 0).[1] (*All warm reg.*[2])

288. **Isostigma** Less.[3]—Flowers[4] (nearly of *Bidens*) 2-morphous; the radial female fertile (sometimes 0); the discal hermaphrodite regular. Radial corollas ligulate, 2–3-dentate at apex, sometimes small; the discal tubular; limb subcampanulate. Anthers subentire at obtuse base. Ovary angularly produced on both sides above; styles of discal flowers long 2-branched; branches produced in long subulate linear appendages. Disk epigynous shortly cylindrical. Fruit dorsally compressed, attenuate at margin or narrowly alate, crowned with 2 lateral, short or elongate, straight or divaricate horns.—Perennial herbs or shrubby at base; stem rather thick short or elongate, sometimes branched; leaves narrow or linear elongate, entire or incised or dissected; capitules solitary terminal at end of long leafless peduncle; receptacle flat or slightly convex; involucral bracts connate at base, 2-seriate; the outer shorter; the inner broader membranous; pales 1-flowered flat or rather concave elongate scarious.[5] (*Brazil.*[6])

289. **Guizotia** Cass.[7]—Flowers[8] fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla open, 3-dentate; the discal hermaphrodite; corolla campanulate, 5-dentate, tube short. Anthers entire or 2-denticulate at base. Style branches of hermaphrodite flowers with subulate hirsute appendages; of female slender revolute. Fruit subterete or dorsally rather compressed, or 3–4-angular, obtuse nearly bare at apex.[9]—Glabrous or scabrous annuals; leaves opposite, or the upper alternate, entire or dentate; capitules[10] terminal or stipitate in upper axils; receptacle more or less convex or conical; bracts of generally subcampanulate

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[1] A sect. of the genus (connecting it with *Bidens-Coreopsidis*) is *Microlecane* Sch. bip. *Flora* (1842), 440.—B. H. *Gen.* ii. 384, n. 421: radial flowers fertile; fruit narrow; pappus shortly cyathiform ciliolate; leaves opposite. (*Abyssinia.*)

[2] Spec. 3. Deless. *Ic. sel.* iv. t. 39.—Anders. *Eug. Reis. Bot.* t. 6.—Reichb. *Ic. exot.* t. 66.—Oliv. and Hiern, *Fl. trop. Afr.* iii. 386 (*Microlecane*), 394.—Walp. *Rep.* vi. 160 (*Adenospermum*), 171; *Ann.* i. 415; v. 230.

[3] *Linnæa*, vi. 513; *Syn.* 235.—DC. *Prodr.* v. 634.—Endl. *Gen.* n. 2570.—B. H. *Gen.* ii. 389, n. 431.

[4] Purplish fuscate when dry.

[5] ? A sect. of *Bidens*, habit anomalous.

[6] Spec. 4, 5. Gardn. *Hook. Lond. Journ.* vii. 408 (*Glossogyne*).—Walp. *Ann.* ii. 869 (*Glossogyne*).

[7] *Bull. Soc. philom.* (1821), 127; *Dict.* lix. 247.—DC. *Prodr.* v. 551; *Pl. rar. Jard. Gen.* vii. t. 2, 3.—Endl.: *Gen.* n. 2507.—B. H. *Gen.* ii. 382, n. 416.—*Ramtilla* DC. *Wight Contrib.* 18.—*Veslingia* Vis. *N. Sagg. Accad. sc. Padov.* v. 269.

[8] Yellow.

[9] The younger often thinly pubescent above, as also the base of the corolla.

[10] Ovoid or campanulate.

involucre 2-seriate; the inner narrower and passing into flat subscarious pales subtending the flowers; the outer larger membranous subfoliaceous. (*Trop. Africa.*[1])

290. **Trichospira** H. B. K.[2]—Flowers[3] hermaphrodite fertile, 1-morphous; *limb of regular tubular corolla 4-fid.* Anthers subentire at base. Style branches subulate hirtellate. Fruit compressed or 3-quetrous, crowned with few (5–8) rigid aristæ (of which 2, 3 larger surmount the angles).—Spreading herbs; leaves alternate, or the uppermost opposite, coarsely unequally dentate, hoary beneath; the basal petiolate; the floral amplexicaul at base; capitules axillar sessile closely crowded; involucral bracts few; the outer 3, 4, shorter membranous; the inner paleaceous and subtending the flowers. (*Trop. America.*[4])

291. **Synedrella** GÆRTN.[5]—Flowers all fertile or partly sterile; the radial female, 1-2-seriate; tube of ligulate corolla very slender; limb short rather broad open, obtusely or rather acutely 2–3-dentate; the discal hermaphrodite; corolla tubular and long attenuated to base; limb 4-lobed. Anthers obtuse or scarcely auriculate at base. Style branches of hermaphrodite flowers with short or long and acute appendages; of female thinner recurved. Radial fruit dorsally much compressed; margins aliform and produced at apex and here and there in ascending aristæ; the discal narrower, much compressed or sometimes 3-quetrous; margins bare, at apex 2-aristate.—Subglabrous, pubescent; strigose or villose annuals; leaves opposite, petiolate oftener unequally dentate; capitules sessile terminal, lateral or axillar, glomerate or solitary; involucral bracts few unequal; the outer 1, 2, larger generally foliaceous; the inner passing into flat pales subtending the flowers; receptacle minute. (*Trop. America, Asia and Africa.*[6])

[1] Spec. 3, of which one is cultivated in India and elsewhere. WIGHT, *Ill.* ii. t. 132.—*Bot. Mag.* t. 1017 (*Verbesina*).—WALP. *Rep.* ii. 610; 611 (*Veslingia*); vi. 157.

[2] *Nov. gen. et spec.* iv. 27, t. 312.—LESS. *Syn.* 150.—DC. *Prodr.* v. 90.—ENDL. *Gen.* n. 2236. —B. H. *Gen.* ii. 383, n. 418.

[3] Very small, pale.

[4] Spec. 1, 2.

[5] *Fruct.* ii. 456, t. 171.—L.-C. RICH. *Pers. Syn.* ii. 472.—CASS. *Dict.* li. 470.—DC. *Prodr.* v. 629.—ENDL. *Gen.* n. 2559.—B. H. *Gen.* ii. 383, n. 417.—*Uoacou* ADANS. *Fam. des pl.* ii. 131 (part., 4 heterogenous being added, ex CASSINI).

[6] Spec. 2. HOOK. *Exot. Fl.* t. 60.—GRISEB. *Fl. brit. W.-Ind.* 377.—WALP. *Rep.* vi. 171.

292. **Calea** L.[1]—Flowers[2] fertile, 2-morphous; the radial female, 1-seriate (sometimes 0); limb of ligulate corolla open, entire or 2–4-dentate; the discal hermaphrodite; limb of tubular corolla campanulate or poculiform, deeply 5-fid. Anthers obtuse at base, sagittate or minutely dentate. Style branches of hermaphrodite flowers rather long, subtruncate at apex or short-conical-appendiculate; of female narrower recurved. Fruit rather long, 4–5-angular; pappus pales 4–∞, compressed long acute rigid, entire or lacerate at apex, sometimes shorter serrulate or ciliolate, more rarely 0.—Herbs, sometimes shrubby or oftener shrubs, sometimes climbing, glabrous or oftener scabrous or villose; leaves opposite, entire, dentate or sometimes pinnatifid; capitules[3] terminal or axillar. solitary or cymose, sometimes 2-stichous cymose;[4] receptacle nearly flat or more or less deeply conical, loaded with concave or complicate pales surrounding the flowers; involucre ovoid, cylindrical or subcampanulate; bracts ∞, imbricate, ∞-seriate; the outer gradually shorter. (*Trop. and subtrop. America.*[5])

293. **Tridax** L.[6]—Flowers[7] fertile, 2-morphous; the radial female, sometimes 0 (*Marshallia*[8]); corolla ligulate or sub-2-labiate; the discal hermaphrodite; limb of regular tubular corolla little expanded or narrow-campanulate, 5-fid. Anthers at sagittate base minutely auriculate or dentate (in radial flowers sometimes

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[1] *Gen.* n. 941 (part.).—J. *Gen.* 185.—Less. *Syn.* 241.—DC. *Prodr.* v. 671.—Endl. *Gen.* n. 2616.—B. H. *Gen.* ii. 390, n. 434.—*Allocarpus* H. B. K. *Nov. gen. et spec.* iv. 291, t. 405.—DC. *Prodr.* v. 676.—Endl. *Gen.* n. 2617.—*Leontophthalmum* W. *Ges. Nat. Fr. Berl.* (1807), 140.—*Meyeria* DC. *Prodr.* v. 679.—Endl. *Gen.* n. 2614.—*Lemmatium* DC. *Prodr.* v. 669.—*Amphicalea* Gardn. *Hook. Lond. Journ.* vii. 411.—*Oteiza* Llav. *Reg. trim. mex.* (1832), 41 (ex DC.).—*Alloispermum* W. *loc. cit.* 139.—*Moçinna* Lag. *Elench. pl. H. matrit.* 31.—*Calydermos* Lag. *loc. cit.* 24.—DC. *Prodr.* v. 669.—Endl. *Gen.* n. 2613.—*Caleacte* R. Br. *Trans. Linn. Soc.* xii. 109.—*Calebrachys* Cass. *Dict.* lv. 277.—*Tetrachyron* Schlchtl, *Linnæa*, xix. 744.

[2] Yellow (or purplish?).

[3] Small or large (*Leontophthalmum*).

[4] The outer younger.

[5] Spec. about 50. H. B. K. *Nov. gen. et spec.* iv. t. 405 (*Allocarpus*), 406–408; 409 (*Leontophthalmum*).—Deless. *Ic. sel.* iv. t. 44; 46 (*Meyeria*).—Wedd. *Chl. andina*, i. 74 (*Allocarpus*).—Walp. *Rep.* ii. 629; *Ann.* i. 416 (*Tetrachyron*); ii. 880 882 (*Lemmatium*).

[6] *Gen.* n. 972.—J. *Gen.* 190.—Poir. *Lamk. Dict.* viii. 86.—DC. *Prodr.* v. 679.—Less. *Syn.* 246.—Endl. *Gen.* n. 2622.—B. H. *Gen.* ii. 392, n. 438.—*Bartolina* Adans. *Fam. des plant.* ii. 124.—*Balbisia* W. *Spec.* iii. 2214 (not DC.).—*Ptilostephium* H. B. K. *Nov. gen. et spec.* iv. 253, t. 387, 388.—DC. *Prodr.* v. 678.—Endl. *Gen.* n. 2621.—*Carphostephium* Cass. *Dict.* xliv. 62.—*Galinsogea* H. B. K. *loc. cit.* 252, t. 386.—*Sogalgina* Cass. *Bull. Soc. philom.* (1818), 31; *Dict.* xlix. 397.—DC. *Prodr.* v. 678.—Endl. *Gen.* n. 2620.—*Mandonia* Wedd. *Bull. Soc. bot. de Fr.* xi. 50, t. 1 (not Sch. bip.).

[7] White, pink, purplish, greenish or yellow.

[8] Schreb. *Gen.* ii. 810.—DC. *Prodr.* v. 680.—Endl. *Gen.* n. 2624.—B. H. *Gen.* ii. 392, n. 436.—*Persoonia* Michx, *Fl. bor.-amer.* ii. 104, t. 43 (not Sm.).—*Trattenikia* Pers. *Syn.* ii. 403.—*Therolepta* Rafin. (ex Torr. et Gr.).

thick rudimentary). Style branches of hermaphrodite flowers short or with short or long appendages.[1] Fruit obconical or obpyramidal, 5-angled; pappus pales 5–∞, short or more or less elongate, longer or shorter paleaceously dilated to base, entire, ciliate, pectinate or plumose, often acuminate.—Annual or perennial herbs, glabrous or variously clothed; leaves alternate or opposite, sometimes rosulate at base; capitules[2] long stipitate solitary; involucre campanulate, hemispherical or ovoid; bracts few-seriate, subequal or equal, herbaceous or membranous at margin; receptacle nearly flat or convex loaded with pales subtending or more rarely enclosing the hermaphrodite flowers.[3] (*Warm and N. America.*[4])

294. **Balduina** Nutt.[5]—Flowers[6] 2-morphous; the radial neutral or sterile; limb of ligulate corolla long open, 2–3-dentate; the discal hermaphrodite; corolla tube rather broad; lobes of little expanded limb 5, sometimes ciliolate. Anthers acuminate or dentate at auriculate base. Style branches of hermaphrodite flowers subulately appendiculate subpenicillate. Fruit obconical villose; pappus pales few (3–10) or ∞, transparent, membranous or scarious, sometimes obtuse.—Virgate herbs, glabrous or scabrous; leaves alternate narrow entire; capitules stipitate solitary or loosely cymose; bracts of hemispherical involucre imbricate unequal; receptacle rather convex loaded between the flowers with rigid or membranous pales, entire or sometimes 2–3-aristate. (*N. America.*[7])

295. **Galinsoga** R. and Pav.[8]—Flowers fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla[9] open, entire

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[1] The second sometimes abortive.

[2] Rather large or small.

[3] A sect. of the genus apparently is *Blepharipappus* Hook. *Fl. bor.-amer.* i. 316 (part.).—DC. *Prodr.* v. 679.—Endl. *Gen.* n. 2623.—B. H. *Gen.* ii. 392, n. 437.—*Ptilonella* Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 387: style branches short; pappus pales (sometimes short) few or ∞, pectinate- or plumose-ciliate; leaves opposite. (*N. Amer.*)

[4] Spec. 10, 11, of which 1 native of India and cont. and ins. Africa. Walt. *Carol.* 291 (*Athanasia*).—Torr. et Gr. *Fl. N.-Amer.* ii. 390 (*Marshallia*), 391 (*Blepharipappus*).—Reichb. *Icon. exot.* t. 13 (*Balbisia*).—Sweet, *Brit. fl. Gard.* t. 56 (*Galinsogea*).—A. Gray, *Man.* (ed. 1856), 224 (*Marshallia*); *Pl. Fendler.* 104, not.—Turcz. *Bull. Mosc.* xxiv. (1851), 187.—Chapm. *Fl. S. Unit. St.* 241 (*Marshallia*).—*Bot. Mag.* t. 1895 (*Galinsogea*), 3704 (*Marshallia*).—Walp. *Ann.* ii. 882; v. 238.

[5] *Gen. amer.* ii. 175 (not Rafin.).—DC. *Prodr.* v. 652.—Less. *Syn.* 238.—Endl. *Gen.* n. 2584.—B. H. *Gen.* ii. 391, n. 435.—*Actinospermum* Ell. *Bot. S.-Carol.* ii. 448.

[6] Yellow.

[7] Spec. 2. Torr. et Gr. *Fl. N.-Amer.* ii. 388, 389.—A. Gray, *Man.* (ed. 1856), 214.—Chapm. *Fl. S. Unit. St.* 241 (*Actinospermum*).

[8] *Prodr. Fl. per.* 110, t. 24.—Cass. *Dict.* xviii. 96.—DC. *Prodr.* v. 672.—Endl. *Gen.* n. 2619.—B. H. *Gen.* ii. 390, n. 433.—*Wiborgia* Roth, *Cat.* ii. 112.—*Vargasia* DC. *Prodr.* v. 676 (part.)—Deless. *Ic. sel.* iv. t. 47.—Endl. *Gen.* n. 2618.

[9] White or lilac.

or 2–3-dentate; the discal hermaphrodite; limb of regular corolla[1] more or less expanded, 5-fid. Anthers minutely auriculate at base. Style branches of hermaphrodite flowers acute or acutely appendiculate; of female narrower revolute. Fruit various; the outer compressed; the inner 3–5-angled; pappus pales few or ∞, membranous or scarious, aristate or obtuse and short, sometimes 0.—Glabrous or variously pilose annuals; leaves opposite, entire or dentate; capitules terminal or axillar stipitate, solitary or loosely cymose; bracts of subhemispherical or campanulate involucre few, obtuse, 1–2-seriate; the outer sometimes herbaceous. (*Trop. and subtrop. America.*[2])

296. **Dubautia** GAUDICH.[3]—Flowers[4] hermaphrodite fertile, 1-morphous; limb of narrow-campanulate corolla 5-fid, valvate. Anthers obtuse or minutely auriculate at base. Style branches with short or very short conical appendages. Fruit long obpyramidal, 10-costate; pappus hairs ∞, paleaceously aristate, ciliate, lacerate or pectinately plumose.—Shrubs sometimes hispidulous; branches nodose; leaves opposite, linear-lanceolate, entire or serrulate above, straight-nerved, dilated and subvaginate at base; capitules[5] in compound racemes more or less sometimes very much branched; bracts of narrow involucre few, 1-seriate; each subtending an outer flower. (*Sandwich Is.*[6])

297. **Madia** MOLIN.[7]—Flowers 2-morphous; the radial fertile, 1–2-seriate; limb of ligulate corolla[8] open, entire or 2–3-dentate or lobed; the discal hermaphrodite fertile or oftener sterile; limb of tubular corolla[9] little expanded, 5-fid or dentate. Anthers oftener entire at obtuse base. Style branches of hermaphrodite flowers hirsute appendiculate, or style more rarely entire. Fruit obovoid-oblong, sometimes compressed or striated; pappus 0 or consisting

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[1] Yellow.

[2] Spec. 4, 5. CAV. *Icon.* t. 281.—REICHB. *Ic. Fl. germ.* t. 983.—A. GRAY, *Man.* (ed. 1856), 225.—REMY, *C. Gay Fl. chil.* iv. 266.—GRISEB. *Fl. brit. W.-Ind.* 379.—WALP. *Rep.* vi. 181, 722; *Ann.* v. 237.

[3] *Freycin. Voy. Bot.* 469, t. 84.—LESS. *Syn.* 247.—DC. *Prodr.* v. 680.—HOOK. and ARN. *Beech. Voy. Bot.* 88.—ENDL. *Gen.* n. 2625.—B. H. *Gen.* ii. 393, n. 439.

[4] "Yellowish pink."

[5] Very small or rather large.

[6] Spec. about 3. A. GRAY, *Proc. Amer. Acad.* v. 134.

[7] *Chil.* 113.—CAV. *Icon.* iii. 50, t. 298.—LAMK, *Dict.* iii. 671; Suppl. iii. 571.—DC. *Mém. Gen.* vii. 277; *Prodr.* v. 691; vii. 294.—ENDL. *Gen.* n. 2628.—B. H. *Gen.* ii. 393, n. 442.—*Biotia* CASS. *Dict. sc. nat.* xxxiv. 308.—*Madaria* DC. *Mém. Gen.* vii. 280; *Pl. rar. Jard. Gen.* 16; *Prodr.* v. 691.—ENDL. *Gen.* n. 2629.—*Madorella* NUTT. *Trans. Amer. Phil. Soc.* ser. 2, vii. 387.—*Anisocarpus* NUTT. *loc. cit.* 388.—*Harpæcarpus* NUTT. *loc. cit.* 389.—*Amida* NUTT. *loc. cit.* 390.

[8] Yellow or more rarely whitish.

[9] Yellow.

of a few lacerate pales.—Perennial or generally annual herbs;[1] leaves alternate, entire, or the lower pinnatifid; capitules terminal or axillar, pedunculate or subsessile, solitary or cymose; bracts of ovoid, hemispherical or campanulate involucre 1-2-seriate; receptacle more or less convex, often foveolate or fringed, and loaded with narrow or concave, often transparent pales subtending or enclosing each of the flowers.[2] (*N. America, esp. west.*[3])

298. **Argyroxiphium** DC.[4]—Flowers fertile, 2-morphous; the radial 1-seriate; limb of ligulate corolla[5] 2–3-dentate; the discal hermaphrodite; limb of tubular corolla[6] 5-dentate. Anthers entire at base. Style branches of hermaphrodite flowers rather compressed, broader to apex, papillose at back, not or very shortly appendiculate at obtuse apex. Fruit linear, 3–5-angled; pappus paleaceous shortly coroniform or cupulate and unequally lobed.—Large thick herbs; stem simple or few-branched; leaves[7] alternate; the lower crowded very elongate subulate thick coriaceous entire densely and nitidly silvery sericeous; captitules in a simple

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[1] Sometimes strong-smelling.

[2] Sections of the genus are:

Layia HOOK. and ARN. *Beech. Voy. Bot.* 148 (not 182).—A. GRAY, *Pl. Fendler.* 103.—DC. *Prodr.* vii. 294.—ENDL. *Gen.* n. 2622[1].—*Madaroglossa* DC. *Prodr.* v. 694.—ENDL. *Gen.* n. 2633.—*Eriopappus* ARN. *Lindl. Introd. Nat. Syst.* ed. 2, 443.—*Calliglossa* HOOK. and ARN. *loc. cit.* 356.—*Oxyura* LINDL. *Bot. Reg.* t. 1850 (not DC.).—*Oxyura* DC. *Prodr.* v. 693; vii. 294.—*Madariopsis* NUTT. *loc. cit.* 327.—*Tollatia* ENDL. *Gen.* n. 2631.—*Calliachyris* TORR. et GR. *Journ. Bost. Soc. Hist.* v. 110.—*Callichroa* FISCH. et MEY. *Ind. sem. H. petrop.* ii. 31.—DC. *Prodr.* vii. 294: discal fruit fertile; pappus pales or aristæ ∞, sometimes 0; involucral bracts dilately marginate, plicate within and surrounding the outer fruit.

Lagophylla NUTT. *Trans. Amer. Phil. Soc.* ser. 2, vii. 390.—B. H. *Gen.* ii. 395, n. 444: discal fruit epappose, oftener vacuous; involucre of *Layia*.

Achyrachæna SCHAU. *Del. sem. H. vratisl.* (1837), ex *Linnæa*, xii. *Litt. Ber.* 87.—DC. *Prodr.* vii. 292.—B. H. *Gen.* ii. 396, n. 446.—*Lepidostephanus* BARTL. *Ind. sem. H. gœtt.* (1837), ex *Linnæa*, xii. *Litt. Ber.* 82: involucre nearly of *Layia*, discal fruit perfect, pales obtuse, 2-seriate, coronate; outer shorter. (*California.*)

Hemizonia DC. *Prodr.* v. 692.—ENDL. *Gen.* n. 2630.—B. H. *Gen.* ii. 394, n 443.—*Osmadenia* NUTT. *Trans. Amer. Phil. Soc.* ser. 2, vii. 391.—*Hartmannia* DC. *loc. cit.* 693.—*Calycadenia* DC. *loc. cit.* 695: involucre scarcely or not sulcate; bracts half enclosing outer fruit; discal fruit generally vacuous; pales of disk sometimes aristate or 0.

[3] Spec. about 45. JACQ. *H. schœnbr.* iii. t. 302.—DON, *Sweet fl. Gard.* ser. 2, t. 373 (*Callichroa*).—ENDL. *Iconogr.* t. 36.—TORR. *Whippl. Exp. Bot.* 52, t. 16 (*Layia*), 53 (*Hemizonia*).—A. GRAY, *Emor. Exp. Bot.* 100 (*Hemizonia*); *Proc. Amer. Acad.* vii. 360 (*Calycadenia*), 548 (*Hemizonia*).—KELL. *Proc. Acad. sc. calif.* ii. 70, ic. (*Hemizonia*).—HOOK. *Icon.* t. 326 (*Madaroglossa*).—*Bot. Reg.* t. 1458.—*Bot. Mag.* t. 2574; 3548 (*Madaria*), 3719 (*Callichroa*).—WALP. *Rep.* ii. 630, 631 (*Madorella, Madaria, Madariopsis, Hemizonia, Tollatia, Hartmannia*), 632 (*Madaroglossa, Callichroa*), 633 (*Osmadenia*), 990 (*Madaria, Hemizonia, Callichroa, Calycadenia*); vi. 182 (*Amida, Lagophylla*), 183 (*Harpæcarpus, Madorella, Madariopsis*); *Ann.* i. 417 (*Hemizonia, Calliachyris*); ii. 883 (*Lagophylla, Layia*); v. 238 (*Madaria, Layia*), 239 (*Madaroglossa*).

[4] *Prodr.* v. 668; *Mém. Comp.* t. 8.—ENDL. *Gen.* n. 2611.—B. H. *Gen.* ii. 393, n. 441.—*Argyrophyton* HOOK. *Comp. Bot. Mag.* ii. 163.

[5] Yellow.

[6] "Pink-purple."

[7] Nearly of *Astelia*.

or compound terminal raceme, stipitate; bracts of broadly subcampanulate or poculiform involucre herbaceous free[1] narrow, 1-seriate, enclosing female flowers; pales of convex receptacle ∞; the outer more or less concrescent[2] around outer flowers and fruit. (*Sandwich Is.*[3])

299? **Wilkesia** A. GRAY.[4]—Flowers, from defect of ligule 1-morphous, hermaphrodite fertile. Fruit linear and angular; pappus pales to 8, acute or aristate.—A full thick herb (or shrub ?); leaves, &c., of *Argyroxiphium*, ciliate at margin, otherwise glabrous or sparsely sericeous congested-subverticillate; the floral shorter and broader; capitules in a loose compound raceme; bracts around outer flowers connate in a (spurious ?) involucre and the outermost bracts free.[5] (*Sandwich Is.*[6])

300. **Melampodium** L.[7]—Flowers[8] 2-morphous; the radial female fertile, 1-seriate; limb of ligulate corolla open, entire or more rarely few-dentate; the discal regular hermaphrodite sterile; corolla tube thin or short; limb campanulate, 5-fid. Anthers at entire base obtuse or minutely dentate. Style of hermaphrodite flowers undivided; of female oftener 2-branched. Fertile fruit (radial) each enclosed in an inner involucral bract accrescent thickened glabrous or variously clothed closely involute,[9] pappus 0.—Annual, perennial or shrubby herbs; leaves opposite, entire, dentate, incised or 1-2-pinnatifid or pinnatisect; capitules[10] terminal or axillar; outer bracts of duplex involucre few herbaceous; the inner enclosing the radial flowers.[11] (*Warm cont. and ins. N. and S. America.*[12] [13])

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[1] But by means of the indumentum more or less coalescent.

[2] Appearing like an inner foliaceous gamophyllous involucre.

[3] Spec. 2. HOOK. *Icon.* t. 75.—A. GRAY, *Proc. Amer. Acad.* v. 136.

[4] *Proc. Amer. Acad.* v. 136.—B. H. *Gen.* ii. 393, n. 440.

[5] A genus perhaps, when better known, to be referred to a sect. of *Argyroxiphium.* For in each genus perhaps there is a true gamophyllous and homologous involucre; outer free bracts added in *Argyroxiphium*, but wanting in *Wilkesia.* [6] Spec. 1. *W. gymnoxiphium* A. GRAY.

[7] *Gen.* n. 989.—J. *Gen.* 188.—DC. *Prodr.* v. 518.—ENDL. *Gen.* n. 2478.—B. H. *Gen.* ii. 348, n. 330.—*Unxia* L. F. *Suppl.* 56.—DC. *Prodr.* v. 212.—*Pronaoron* CASS. *Dict.* xliii. 370.—DC. *Prodr.* v. 508.—*Alcina* CAV. *Icon.* i. 10, t. 15 (not TH.).—*Zarabellia* CASS. *Dict.* lix. 240.—*Camutia* BONAT. ex STEUD. *Nom.* ii. 113.—*Dysodium* RICH. *Pers. Syn.* ii. 489.

[8] Yellow. [9] Often considered a pericarp.

[10] Small or moderate.

[11] Sections of the genus are:

Acanthospermum SCHRANK, *Pl. rar. H. monac.* 53.—DC. *Prodr.* v. 521.—ENDL. *Gen.* n. 2479.—*Centrospermum* H. B. K. *Nov. gen. et spec.* iv. 270, t. 397 (not SPRENG.).—*Orcya* VELL. *Fl. flum.* 344; Atl. viii. t. 83: bracts enclosing fruit spinose or glochidiately muricate.

Leocarpus DCNE, *Voy. Vénus*, *Bot.* 20, t. 14.—B. H. *Gen.* ii. 348, n. 329: bracts enclosing fruit obconical thickened around a small mouth; leaves 1-2-pinnatifid or pinnatisect. (*Galapagos.*)

[12] Whence 1 spec. spread through old world.

[13] Spec. about 20. JACQ. F. *Ecl.* t. 78 (*Alcina*).

301. **Guardiola** H. B.[1]—Flowers[2] 2-morphous; the radial few (1–5) female fertile; limb of ligulate corolla (sometimes small) entire, 2–3-lobed or 2–3-dentate; the discal hermaphrodite few (2–8) sterile; tube of regular corolla elongate; limb cup-shaped, 5-fid. Anthers entire at base. Style undivided or 2-branched. Discal fruit thin vacuous; the radial oblong, smooth or striate; basal callus sometimes thick, central or lateral; aristæ of pappus 2, open or recurved or oftener 0.—Glabrous or scabrous herbs; leaves opposite, dentate or 3–5-sect; capitules terminal corymbiform-cymose, oftener 2-chotomous; bracts of cylindrical involucre few, sometimes 2-seriate, membranous; the outer sometimes very short; receptacle narrow flat and loaded with pales subtending or enclosing the flowers.[3] (*West N. America.*[4])

302. **Chrysogonum** L.[5]—Flowers[6] 2-morphous; the radial female fertile, 1-seriate; limb of ligulate corolla open, entire or 2–3-dentate; the discal hermaphrodite sterile; limb of tubular corolla narrow campanulate, 5-fid. Anthers obtuse or minutely dentate at base. Style of hermaphrodite flowers undivided; of females sometimes 2-branched. Discal fruit narrow vacuous; the radial compressed, flat, sometimes very thick 3-quetrous, often 2–3-costate or carinate within; margins sometimes alate; pappus small disk-like, coroniform or dentate, deciduous or consisting of 2 short teeth or aristæ.—Annual, perennial or subshrubby herbs; leaves opposite, entire, dentate or pinnately dissected, glabrous, scabrous or villose; capitules[7] stipitate, solitary or loosely cymose;[8] bracts of ovoid or campanulate involucre few sub-2-seriate, rather rigidly membranous or herbaceous; receptacle flat or slightly convex, loaded with pales subtending or encircling the hermaphro-

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—H. B. K. *Nov. gen. et spec.* iv. t. 398, 399.—Reichb. *Icon. exot.* t. 42.—A. Gray, *Proc. Amer. Acad.* viii. 291.—Walp. *Rep.* ii. 605, 976; *Ann.* ii. 849; v. 214.

[1] *Pl. æquin.* i. 143, t. 41.—Cass. *Dict.* xx. 12; lix. 319.—Less. *Syn.* 419.—DC. *Prodr.* v. 511.—Endl. *Gen.* n. 2472.—B. H. *Gen.* ii. 347, n. 327.—*Guardiola* Ste. (ex Endl.).—*Tulocarpus* Hook. and Arn. *Beech. Voy. Bot.* 298, t. 63.

[2] "White."

[3] A sect. of the genus is *Dicranocarpus* A. Gray, *Mem. Amer. Acad.* ser. 2, v. 322; *Torr. Emor. Exp. Bot.* 85.—B. H. *Gen.* ii. 347, n. 326: capitules small; fruit 2-cristate or epappose; stem annual; leaves filiform, entire or 3-5-sect. (a sect. connecting the genus with *Coreopsis* and *Chrysanthellum*).

[4] Spec. 5. H. B. K. *Nov. gen. et spec.* iv. 247.—Walp. *Rep.* vi. 149 (*Tulocarpus*); *Ann.* v. 212 (*Dicranocarpus*), 213.

[5] *Gen.* n. 988 (not Bauh.).—Lamk, *Ill.* t. 713.—DC. *Prodr.* v. 510.—Endl. *Gen.* n. 2471.—B. H. *Gen.* ii. 350, n. 334.—*Diotostephus* Cass. *Dict. sc. nat.* xlviii. 543.—*Pentalepis* F. Muell. *Trans. Bot. Soc. Edinb.* vii. 496.

[6] Yellow.

[7] Moderate or small.

[8] Sections of the genus are:

Moonia Arn. *Nov. Acta. nat. Cur.* xviii. 348.—DC. *Prodr.* vii. 288.—Endl. *Gen.* n. 2491[1]: leaves dentate or oftener dissected (*E. India*). A sect. somewhat connecting the genus with *Bidens*.

Baltimora L. *Mantiss.* 158.—Lamk, *Ill.* t. 709.—Cass. *Dict.* xxvii. 283; xlvi. 399, 412.

dite flowers. (*Trop. and extratrop N. and S. America, E. India, Australia.*[1])

303. **Parthenium** L.[2]—Flowers[3] 2-morphous; the radial female fertile, 1-seriate; tube of ligulate corolla short, limb concave subobcordate, 2-lobed or dentate.; the discal hermaphrodite or male sterile; limb of tubular corolla little expanded, 5-dentate. Anthers often exserted, entire at base. Style of discal flowers undivided; of female oftener 2-branched. Discal fruit thin vacuous; the radial dorsally compressed, sometimes carinate within, marginate; margins sometimes finally solute; pappus hairs minute;[4] with 2, 3, short soft or rather long rigid aristæ intermixed (sometimes 0).—Herbs,[5] undershrubs or shrubs, often hoary tomentose; leaves alternate, entire, dentate or pinnatisect, scabrous or often tomentose beneath, sometimes nearly glabrous; capitules (small) in a compound cymiferous raceme; bracts of hemispherical or broadly campanulate involucre 2- or few-seriate, imbricate, obtuse; the outer shorter, sometimes few or very small; the inner encircling or half enclosing the radial flowers; all generally rather broad dry; receptacle more or less convex or conical and loaded with pales encircling or subtending the discal flowers; the inner sometimes very small.[6] (*Temp. N. and S. America, Antilles.*[7])

—Endl. *Gen.* n. 2470.—B. H. *Gen.* ii. 348, n. 328.—*Fougeria* Mœnch, *Meth.* 592, Suppl. 243.—*Fougerouxia* DC. *Prodr.* v. 509.—*Scolospermum* Less. *Linnæa*, v. 152, t. 2; *Syn.* 219 (ex B. H.).—DC. *Prodr.* v. 509.—Endl. *Gen.* n. 2469: fruit 3-quetrous; pappus cyathiform short deciduous; cymes of capitules loose. (*Trop. Amer.*)

(?) *Trigonospermum* Less. *Syn.* 214; *Linnæa*, ix. 267.—DC. *Prodr.* v. 508.—Endl. *Gen.* n. 2467.—B. H. *Gen.* ii. 346, n. 322: fruit obovoid, angularly-striated, epappose, enclosed within bract of involucre and inner pale (hence connecting *Parthenium* with *Parthenice*); leaves opposite broad glandular-pubescent; capitules small loosely cymose. (*Mexico.*)

[1] Spec. about 10. Wight, *Icon.* t. 1105 (*Moonia*).—A. Gray, *Man.* (ed. 1856), 209.—Benth. *Fl. austral.* iii. 539 (*Moonia*).—Walp. *Ann.* i. 413 (*Moonia*); v. 213 (*Baltimora*).

[2] *Gen.* n. 1058.—J. *Gen.* 191.—Gærtn. *Fruct.* ii. 429.—Cass. *Dict.* xxxviii. 14.—Less. *Syn.* 319.—DC. *Prodr.* v. 531.—Endl. *Gen.* n. 2489.—B. H. *Gen.* ii. 351, n. 338.—*Partheniastrum* Nissol. *Act. Acad. Par.* (1711).—*Hysterophorus* Vaill. *Act. Acad. Par.* (1720), 335.—*Trichospermum* P. Beauv. (ex DC.).—*Argyrochæta* Cav. *Ic.* iv. 54, t. 878.—*Villanova* Ort. *Dec.* 47, t. 6 (not Lag.).—*Bolophyta* Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 347 (an alpine species; stem thick and densely cæspitose).

[3] White or yellow.

[4] Sometimes fugaceous.

[5] Sometimes habit of *Ambrosieæ*.

[6] Sections of the genus are:

Aiolotheca DC. *Prodr.* v. 508.—Endl. *Gen.* n. 2466.—B. H. *Gen.* ii. 339: leaves (hoary) undivided; cymes corymbiform, ligules small; fruit villose, 3-gonal; margins not solute; pappus 0. (*Mexico.*)

Parthenice Torr. et Gr. *Pl. Wright.* ii. 85.—B. H. *Gen.* ii. 352, n. 340: leaves alternate full undivided; cymes of capitules loosely compound racemose; fruit obovoid compressed epappose; margins not solute. (*Mexico.*)

[7] Spec. 7, 8. W. *H. berol.* t. 4.—H. B. K. *Nov. gen. et spec.* iv. t. 391.—A. Gray, *Man.* (ed. 1856), 211; *Emor. Exp. Bot.* 86.—*Bot. Mag.* t. 2275.—Walp. *Rep.* vi. 151; *Ann.* v. 216 (*Parthenice*).

304. **Espeletia** Mut.[1]—Flowers[2] 2-morphous; the radial female fertile, 1–2-seriate; limb of ligulate corolla open, often 2–3-dentate; the discal regular hermaphrodite sterile; limb of tubular corolla 5-fid. Anthers minutely acuminate-auriculate at base. Style of hermaphrodite flowers undivided. Discal fruit vacuous; radial thickly obovoid, 3–4-angled or slightly compressed, without pappus.—Very tall or low perennial herbs, sometimes shrubs or trees; indumentum generally dense, tomentose or lanate; leaves alternate or opposite elongate entire, often thick, under indumentum transversely parallel-nerved; capitules[3] solitary or loosely corymbiform-cymose; bracts of hemispherical or broadly campanulate involucre unequal, 2–3-seriately imbricate; the inner thinner. (*Andine S. America.*[4])

305. **Silphium** L.[5]—Flowers[6] 2-morphous; the radial female fertile, 1–2-seriate; limb of ligulate corolla open, entire or few-dentate; the discal hermaphrodite sterile; limb of regular corolla shortly 5-fid or 5-dentate. Anthers obtuse at base entire or minutely dentate. Style of hermaphrodite flowers undivided, oftener papillose-hirsute; of female oftener 2-branched. Fruit subterete or dorsally much compressed or 3-angular, acute or alate at margins, either subenclosed between subtending bract and inner pale and more or less coalite with them at base, or free from them, without pappus or crowned with a few hairs.—Herbs[7] oftener perennial or radicant at base or sometimes shrubby, scabrous[8] or more rarely glabrous, sometimes hirsute; leaves alternate, opposite or verticillate, entire, dentate or more rarely pinnatifid, capitules[9] hemispherical or broadly campanulate, solitary or in corymbiform, sometimes foliate cymes; bracts of hemispherical or rather broad subcampanulate involucre few or ∞; the outer sometimes few herbaceous or subfoliaceous[10];

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[1] Ex. H. B. *Pl. æquin.* ii. 11, t. 70–72.—DC. *Prodr.* v. 516.—Endl. *Gen.* n. 2476.—B. H. *Gen.* ii. 347, n. 324.—*Libanothamnus* Ernst, *Vargasia* (1870), 186 (ex B. H.).

[2] "Yellow."

[3] Large or moderate.

[4] Spec. 10, 11. H. *Rel. hist.* i. 645 (*Trixis*).—H. B. K. *Nov. gen. et spec.* iv. 280, 289 (*Bailleria*).—DC. *Prodr.* v. 507, n. 14 (*Clibadium?*).—Wedd. *Chlor. andin.* i. 62, t. 15.—*Bot. Mag.* t. 4480.

[5] *Gen.* n. 986.—J. *Gen.* 188.—Cass. *Dict.* lix. 319.—Less. *Syn.* 213.—DC. *Prodr.* v. 511.—Endl. *Gen.* n. 2474.—B. H. *Gen.* ii. 350, n. 333.

[6] Yellow.

[7] Sap sometimes resinous.

[8] At base of hairs sometimes cretaceous rugose.

[9] Large or moderate.

[10] Sections (often ill-defined) of the genus perhaps are:

receptacle flat or slightly convex loaded with concave or complicate bracts subtending or encircling the flowers. (*Extratrop. N. and S. America.*[1])

306. Ichthyothere Mart.[2]—Flowers[3] 2-morphous; the outer few female fertile; corolla tubular short, unequally 3–4-dentate or fid; the discal hermaphrodite sterile; limb of regular tubular corolla little expanded, 5-dentate. Anthers obtuse at base, entire or minutely dentate. Style of hermaphrodite flowers undivided. Discal fruit vacuous; the outer thickly obovoid compressed, costate or smooth, without pappus.—Herbs or undershrubs, glabrous, scabrous or hirsute; leaves opposite, entire or serrulate; capitules (small) stipitate or subsessile closely cymose; bracts of subglobular or ovoid involucre imbricate many-seriate; the inner passing into unequal pales subtending the flowers and often coherent with them. (*Trop. America.*[4])

Polymnia L. *Gen.* n. 987.—DC. *Prodr.* v., 515.—Gærtn. *Fruct.* ii. 429.—Endl. *Gen.* n. 2475.—B. H. *Gen.* ii. 346, n. 323.—*Polymniastrum* Lamk, *Ill.* t. 712.—*Alymnia* Neck. *Elem.* i. 31 (ex DC.): bracts of broad involucre often foliaceous; fruit obovoid; stem shrubby or arborescent; leaves opposite or the upper alternate, entire or lobed; inflorescence compound cymose. (*N. and S. Amer.*)

Philoglossa DC. *Prodr.* v. 567.—Deless. *Ic. sel.* iv. t. 33.—Endl. *Gen.* n. 2525: stem decumbent radicant; leaves opposite or sometimes subverticillate; involucre broad, radial flowers numerous, 1–2-seriate; ligules narrow; pappus hairs few (1–4) or 0, very caducous; capitules solitary stipitate. (*West. S. Amer.*)

? *Berlandiera* DC. *Prodr.* v. 517.—Deless. *Ic. sel.* iv. t. 26.—Endl. *Gen.* n. 2477.—B. H. *Gen.* ii. 350, n. 335: fruit dorsally compressed and attached to a dorsal bract; pappus cyathiform small or shortly 2-aristate; inflorescence loosely corymbiform; capitules sometimes few; bracts of broad involucre broad obtuse foliaceous; stem herbaceous or subshrubby; leaves alternate, crenate or pinnatifid. (*Mexico.*)

Engelmannia Torr. et Gr. *Fl. N.-Amer.* ii. 283 (not Kl., nor Pfeiff.).—B. H. *Gen.* ii. 351, n. 337.—*Angelandra* Endl. *Gen.* Suppl. iii. 69 (not Kl.): stem herbaceous; leaves alternate, pinnatilobed or pinnatisect; capitules moderate; inflorescence loosely cymose; involucral bracts narrow; fruit minutely 2–∞-paleaceous or aristate. Other characters of *Berlandiera*. (*Texas.*)

Lindheimera A. Gray and Engelm. *Journ. Bot. Nat. Hist. Soc.* vi. 225.—B. H. *Gen.* ii. 351, n. 336: stem herbaceous; leaves alternate unequally dentate or subentire; cymes corymbiform; fruit compressed laterally alate; wings shortly dentate or aristate. (*Texas.*)

? *Schizoptera* Turcz. *Bull. Mosc.* (1851), i. 181.—B. H. *Gen.* ii. 349, n. 332: fruit free from bract with lacerate wings produced in teeth or short aristæ; stem herbaceous (?) branched (habit of *Baltimora*); leaves opposite undivided; capitules cymose (rather small) between floral leaves; bracts of subcampanulate involucre few sub-2-seriate. (*Equador.*)

[1] Spec. about 33. Jacq. *H. vindob.* i. t. 43.—Jacq. f. *Ecl.* t. 90.—Cav. *Icon.* t. 227 (*Polymnia*).—Pœpp. et Endl. *Nov. gen. et spec.* t. 254 (*Polymnia*).—Torr. et Gr. *Fl. N.-Amer.* ii. 275; 280 (*Berlandiera*).—A. Gray, *Man.* (ed. 1856), 209.—Chapm. *Fl. S. Unit. St.* 220.—Torr. *Marc. Exp. Bot.* t. 11 (*Engelmannia*).—*Bot. Mag.* t. 3354, 3355.—Walp. *Rep.* ii. 604; 505 (*Polymnia, Berlandiera*), 975; 976 (*Angelandra*); vi. 149 (*Engelmannia*), 721; *Ann.* i. 412; ii. 849 (*Lindheimera, Angelandra*); v. 210; 214 (*Angelandra*).

[2] *Arzneipfl.* 27.—DC. *Prodr.* v. 504.—Endl. *Gen.* n. 2461.—B. H. *Gen.* ii. 346, n. 321.—*Latreillea* DC. *loc. cit.*—*Torrentia* Vell. *Fl. flum.* Atl. viii. t. 149.

[3] "Whitish or yellowish."

[4] Spec. about 8. Pœpp. et Endl. *Nov. gen. et spec.* t. 252 (*Latreillea*).—Moric. *Pl. nouv. Amér.* t. 89.—Field, *Sert. plant.* t. 8, 9.—Walp. *Rep.* ii. 603 (*Latreillea*); vi. 148; *Ann.* i. 412.

307 ? **Dugesia.** A GRAY.[1]—"Capitules heterogamous; radial flowers female 8–12; discal very numerous hermaphrodite sterile. Involucre duplex broad; receptacle flat; pales scarious narrow linear. Radial corollas ligulate; discal nearly of *Silphium.* Style sterile of *Silphium.* Fruit obovoid turgid; dorsal costa terminating in a stiff subulate tooth; margins dentately alate; pappus (?) cartilaginous auriculiform-lobed.—A low perennial herb; leaves pinnatifid."[2] (*S. Luis Potosi.*)

308 ? **Lagascea** CAV.[3]—Flowers in heads solitary hermaphrodite fertile; tube of regular corolla[4] rather long; limb subcampanulate, 5-fid. Anthers subsagittate at obtuse base. Style suddenly attenuated at base and there girt with epigynous disk; branches 2, elongate hirsute, rather acute at apex, finally revolute.[5] Fruit obpyramidally 2–3-quetrous, annular-denticulate at apex or shortly 2–3-aristate at angles.—Herbs or shrubs, scabrous or softly pilose, sometimes glutinous; leaves opposite, or the upper alternate, entire or dentate; heads in a subglobular or hemispherical, solitary or corymbiform-cymose and stipitate capitule surrounded by a few leaves; bracts of single involucel 4, 5, more or less connate in a spurious calyx.[6] (*Warm N. and S. America.*[7])

309. **Milleria** L.[8]—Flowers[9] 2-morphous; the radial 1, or more rarely 2, female fertile; limb of ligulate corolla 3-dentate or 3-fid; the discal few (3–6) female sterile; tube of regular corolla short; limb campanulate, 5-dentate. Anthers minutely 2-dentate at auriculate base; connective rather obtuse at apex. Style of hermaphrodite flowers undivided columnar; of female 2-branched. Fruit oftener in an enlarged involucre solitary obovoid compressed glabrous striate, without pappus.—A branched puberulous herb;

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[1] *Proc. Amer. Acad.* xvii. 215.

[2] Spec. 1. *D. mexicana* A. GRAY (*Lindheimera mexicana* A. GRAY, *Proc. Amer. Acad.* xv. 34. A genus referred by the author to the *Melampodieæ*.

[3] *Ann. scienc. nat.* vii. 333, t. 44 (*Lagasca*).—POIR. *Dict.* Suppl. iii. 234 (*Lagasca*).—DC. *Prodr.* v. 91.—ENDL. *Gen.* n. 2237.—B. H. *Gen.* ii. 342, n. 309.—*Nocca* JACQ. *Fragm.* 58, t. 85.—*Nocca* CAV. *Icon.* iii. 12, t. 224.

[4] Yellow, red or white; nerves sometimes violet.

[5] Ovule manifestly excentric.

[6] A genus anomalous in the series, somewhat resembling the *Vernonieæ*.

[7] Spec. 6, 7, H. B. K. *Nov. gen. et spec.* iv. t. 111.—DESVX, *Journ. Bot.* i. t. 2.—SWEET, *Brit. fl. Gard.* t. 215 (*Nocea*).—SEEM. *Her. Bot.* 298.—*Bot. Mag.* t. 1804.—WALP. *Rep.* vi. 102.

[8] *Gen.* n. 985 (part.).—J. *Gen.* 187.—LAMK, *Ill.* t. 710.—GÆRTN. *Fruct.* ii. 423, t. 168, f. 5.—DC. *Prodr.* v. 503.—ENDL. *Gen.* n. 2458.—B. H. *Gen.* ii. 344, n. 316.

[9] Yellow.

leaves opposite membranous dentate; petiole more or less broadly alate; capitules[1] in loose, 2-chotomous or 1-parous cymes; bracts of unequally subglobular involucre few unequal; the outer 2, larger, of which 1 broader and concave, finally accrescent and rather fleshy; the lateral 2, 3, much smaller membranous, sometimes passing into a few linear erect pales between the flowers. (*West. trop. N. and S. America.*[2])

310 (?) **Plummera** A. Gray.[3]—"Capitules heterogamous; radial flowers female 2–5, ligulate; males 6–8. Involucre obpyramidal duplex; receptacle flat bare. Style in discal flowers 2-fid; branches semi-peltate at apex. Fruit turgid epappose.—A biennial (?) aromatic herb; leaves 1–3-ternately partite; capitules very numerous fastigiately cymose.[4]

311. **Tetranthus** Sw.[5]—Flowers[6] in capitules 4 (or more rarely 5); corolla in all the same tubular; limb narrow-campanulate, 5-dentate.[7] Stamens in all flowers 5; anthers obtuse or minutely dentate at base. Ovary in 2 flowers (or sometimes in all) fertile; in the others effete; style branches with short acute hirsute appendages, finally recurved. Fruit oblong; pappus short coroniform unequally ciliate-dentate.—Low creeping herbs, glabrous or variously pilose; leaves opposite petiolate; capitules[8] solitary at end of filiform axillar peduncle; bracts of subcampanulate involucre imbricate, 2-seriate; the inner 4 (or more rarely 5), elongate concave and surrounding each flower; the outer more numerous (6–8) very small and unequal. (*Hispaniola.*[9])

312. **Pinillosia** Ossa.[10]—Flowers nearly of *Tetranthus*, 4 in each capitule; the radial female 2; corolla 0; the discal male 2, alternating with the female; corolla regular. Style branches of each flower 2. Fruit obovoid or elongate; aristæ of pappus few generally retrorsely aculeate and capitellate, sometimes deciduous.

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[1] Very small.

[2] Spec. 1. *M. quinqueflora* L. *Spec.* 1301.—*M. dichotoma* Cav. *Icon.* i. 58, t. 82.—Mart. *Cent.* t. 41.—*M. maculata* Mill. *Dict.* n. 2.

[3] *Proc. Amer. Acad.* xvii. 215.

[4] Spec. 1. *P. floribunda* A. Gray.

[5] *Prodr.* 116; *Fl. ind. occ.* 1385, t. 27.—DC. *Prodr.* v. 528.—Deless. *Ic. sel.* iv. 12, t. 27, ii.—Endl. *Gen.* n. 2484.—B. H. *Gen.* ii. 343, n. 312.

[6] Very small, whitish.

[7] In female flower "sometimes ligulate."

[8] Small.

[9] Spec. 2 (or 3 ?).

[10] Ex DC. *Prodr.* v. 528.—Deless. *Ic. sel.* iv. t. 27.—Endl. *Gen.* n. 2483.—B. H. *Gen.* ii. 342, n. 311.

Other characters of *Tetranthus*.—Low cæspitose or creeping herbs ; leaves basal or higher inserted opposite ; capitules[1] solitary at end of scape or filiform peduncle ; receptacle minute ; involucral bracts oftener 6, of which 2 broader membranous, to which the female flowers are axillar ; 2 narrower alternating with the former, to which the male flowers are axillar, and below these 2, outer very small and sterile.[2] (*Cuba.*[3])

313. **Clibadium** L.[4]—Flowers[5] 2-morphous ; the outer few (1–3) or oftener ∞, 1–2-seriate, female fertile ; limb of thin tubular corolla little dilated, generally unequally 2–3-dentate ; the discal few or 1, or oftener ∞, hermaphrodite sterile ; tube of regular corolla often thin ; limb subcampanulate, 4–5-fid or dentate. Anthers entire or minutely dentate at auriculate base. Style of hermaphrodite flowers undivided ; of female more or less deeply 2-branched. Discal fruit sterile elongate or abortive ; the radial obovoid or compressed, terete or few-angled, without pappus.—Herbs or undershrubs, oftener scabrous or villose ; leaves opposite, petiolate, entire or dentate, often rugose ; capitules (small) few- or ∞-flowered in more or less branched or sometimes contracted corymbiform racemes ; bracts of ovoid, subglobular or subcampanulate involucre few concave, unequal, imbricate ; receptacle small bare or paleaceous between the flowers.[6] (*Trop. N. and S. America.*[7])

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[1] Very small.

[2] Perhaps better a sect. of *Tetranthus* ; female flowers apetulous.

[3] Spec. 2, 3. Griseb. *Cat. pl. cub.* 153.

[4] *Mantiss.* 161.—DC. *Prodr.* v. 505.—Endl. *Gen.* n. 2462.—B. H. *Gen.* ii. 345, n. 320.—*Baillieria* Aubl. *Guian.* ii. 804, t. 317.—*Trixis* Sw. *Fl. ind. occ.* 1374, t. 26 (not L.).—*Oswalda* Cass. *Dict.* lix. 322.—*Orsinia* DC. *Prodr.* v. 104.

[5] Whitish or yellowish.

[6] Sections of the genus are :

Desmanthodium Benth. *Hook. Icon.* t. 1116 ; *Gen.* ii. 345, n. 319 : female flowers 1–3 ; hermaphrodite ∞ ; capitules sessile in corymbiform cymes. (*Mexico.*)

Riencourtia Cass. *Bull. Soc. philom.* (1818), 76 ; *Dict.* xlv. 406.—DC. *Prodr.* v. 503.—Endl. *Gen.* n. 2459.—B. H. *Gen.* ii. 345, n. 318 : inflorescence terminal contracted spuriously capitate ; bracts of oblong involucre 4, decussate ; female flower oftener 1 ; hermaphrodite few. (*Brazil, Guiana.*) Sect. connecting the genus with *Elvira.*—? *Pontesia* Vell. *Fl. flum.* Atl. viii. t. 147 (ex B. H.).

Lantanopsis Wright, *Griseb. Pl. Wright.* (*Mem. Amer. Acad.* ser. 2, viii. 513).—B. H. *Gen.* ii. 344, n. 314 : bracts of long-ovoid involucre to 4 ; female flower 1 ; hermaphrodite 1 ; capitules (very small) in terminal cymes. (*Hispaniola, Cuba.*)

Stachycephalum Sch. bip. ex Benth. *Hook. Icon.* t. 1102 ; *Gen.* ii. 344, n. 315 : female flowers 1, 2 ; hermaphrodite few (3, 4) ; capitules in dense cymes ; bracts of ovoid involucre 3, 4, thinly membranous ; one larger surrounding fruit ; receptacle narrow bare. (*Mexico.*) Sect. connecting genus with *Milleria.* And some species of *Clibadium* approach *Ichthyothere.*

[7] Spec. about 25. Balb. *Pl. rar. H. taur.* t. 6 (*Eupatorium*).—Pœpp. et Endl. *Nov. gen. et spec.* t. 253.—Wawr. *Maxim. Reis. Bot.* t. 81.—Griseb. *Fl. brit. W.-Ind.* 367 ; *Symb. Fl. argent.* 188.—Walp. *Rep.* vi. 148 ; *Ann.* ii. 847 (*Riencourtia*) ; v. 212.

314. **Heptanthus** Griseb.[1]—Flowers nearly of *Tetranthus*, 2-morphous; the radial female fertile; limb of ligulate corolla short, 2–3-dentate; the discal hermaphrodite sterile; limb of subregular corolla campanulate, 5-merous. Anthers obtuse at base. Style of discal flowers undivided; of radial 2-branched. Fruit rather long obconical; pappus coroniform ciliate short or 0.—Perennial cæspitose herbs; stem very short; leaves basal rosulate petiolate, orbicular, ovate or cordate, entire or dentate; capitules few-flowered solitary at end of filiform peduncle; bracts of obconical involucre 4–6, subequal herbaceous; female flowers very few; receptacle minute bare. (*Cuba.*[2])

315. **Elvira** Cass.[3]—Flowers[4] nearly of *Clibadium*, 2-morphous, few (3–8, or sometimes 2); the radial 1–3, female fertile; tube of ligulate corolla thin; limb small open, entire or few-dentate; the discal 1–5, hermaphrodite sterile; limb of tubular corolla narrow campanulate, 5-fid. Anthers entire at base. Style, &c., of *Clibadium*.—Scabrous herbs, often annual and branched; leaves opposite, entire or minutely dentate; capitules in more or less contracted cymes, axillar or terminal; involucral bracts few; the outer 1–3, herbaceous membranous, larger unequally accrescent, reticulate-veined, spuriously samaroid; the inner 2–4, smaller or very small; receptacle small and bare. (*Trop. west. cont. and ins. N. and S. America.*[5])

316? **Sheareria** Le Moore.[6]—Flowers[7] few, 2-morphous; the radial 2–4, female fertile; limb of ligulate corolla subentire; the discal 1–3, hermaphrodite sterile; limb of tubular corolla 5-fid. Anthers obtuse at base. Style branches of flowers of both sexes short, or of female undivided. Fruit oblong, 3-angularly subalate; pappus 0.—Thin glabrous annuals; leaves alternate small narrow; capitules[8] terminal or axillar stipitate solitary; involucral bracts few unequal imbricate; receptacle nearly flat narrow bare. (*China.*[1])

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[1] *Cat. pl. cub.* 148.—B. H. *Gen.* ii. 342, n. 310.

[2] Spec. 2, 3.

[3] *Dict.* xxx. 67.—DC. *Prodr.* v. 503.—Endl. *Gen.* n. 2457.—B. H. *Gen.* ii. 343, n. 313.—*Maratia* Cass. *loc. cit.* 65.—*Delilia* Spreng. *Syst.* iii. 367.—*Desmocephalus* Hook. f. *Trans. Linn. Soc.* xx. 208.—*Micrococcia* Hook. f. *Journ. Linn. Soc.* xxviii. 278; *loc. cit.* 209.

[4] Whitish (?) or yellow.

[5] Spec. 3, L. *H. Cliffort.* t. 25 Walp. *Rep.* vi. 310 (*Desmocephalum*), 311 (*Micrococcia*).

[6] *Trim. Journ. Bot.* (1875), iv. 227, t. 165.—B. H. *Gen.* ii. 1234, n. 317 *a*.

[7] Very small, whitish.

[8] Very small.

317. **Adenocaulon** Hook.[2]—Flowers 2-morphous; the radial ∞, sometimes few female fertile; limb of corolla campanulate subirregular, 4–5-partite; the discal hermaphrodite sterile; limb of corolla regular 5-fid. Anthers (in female flower sometimes rudimentary) obtuse or minutely dentate at base. Styles of all flowers very shortly 2-lobed at obtuse apex, or of hermaphrodite undivided. Discal fruit abortive; radial ovoid stipitately or capitately glandular, without pappus.—Annual or perennial herbs, entirely or partly stipitate-glandular; leaves alternate; the lower petiolate, tomentose beneath;[3] capitules[4] in a more or less ramose cymiferous raceme; bracts of broadly campanulate or subhemispherical involucre few (5, 6) subequal; receptacle nearly flat bare. (*N. America, Chili, Himalaya, Japan.*[5])

318. **Podanthus** Lagasc.[6]—Flowers[7] diœcious; corolla regular, of the males thinly tubular; limb oblong 5-fid; of females campanulate, 5-lobed; tube very short. Anthers rather obtuse at base, in female flowers rudimentary, small or sterile. Branches of style (girt at base with cylindrical disk) 2 (or more rarely 3), rather acute or obtuse sometimes roundly dilated. Fruit compressed-4-angled, attenuate at base and crowned with an annular denticulate pappus or sometimes bare.—Branching shrubs, puberulous or scabrous and resinous; leaves opposite, entire or dentate; capitules stipitate terminal or axillar, globular, ∞-flowered; involucral bracts few, 1–2-seriate; receptacle convex or subglobular and loaded with concave pales encircling and subtending the flowers. (*Chili.*[8])

319? **Astemma** Less.[9]—Flowers[10] diœcious; males . . . ?; corolla of females tubular; lobes of regular campanulate limb 5; anthers sterile small free. Style branches short subulate recurved. Fruit (immature) elongate vacuous, without pappus.—A branching tree; leaves[1] alternate, remotely denticulate puberulous, subtriplinerved; female capitules (8–15-flowered) narrow, in densely corymbiform cymes; bracts of narrow involucre few elongate, imbricate; receptacle narrow loaded with complicate pales enfolding the flowers.[2] (*Equador Andes.*[3])

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[1] Spec. 1, v. ? 2 (incl. *S. Polii* Franch.).

[2] *Bot. Misc.* i. 19, t. 16.—DC. *Prodr.* v. 207.—Endl. *Gen.* n. 2287.—B. H. *Gen.* ii. 344, n. 317.

[3] Of some *Cinerariæ.*

[4] Small or minute.

[5] Spec. 3, 4. Hook. *Fl. bor.-amer.* i. 308.—Less. *Linnæa,* vi. 107.—Walp. *Rep.* ii. 557; vi. 716; *Ann.* v. 149.

[6] *Nov. gen.* 24.—Less. *Syn.* 216.—DC. *Prodr.* v. 501.—B. H. *Gen.* ii. 356, n. 351.—*Euxenia* Cham. *Hor. phys. berol.* 75, t. 16.—Cass. *Dict.* xxv. 446.—Endl. *Gen.* n. 2454.

[7] Yellowish.

[8] Spec. 2. Remy, *C. Gay Fl. chil.* iv. 295 (*Euxenia*).

[9] *Syn.* 216 (not Endl.).—DC. *Prodr.* v. 502.—Endl. *Gen.* n. 2456.—B. H. *Gen.* ii. 356, n. 352.

[10] "White."

320. **Laxmannia** FORST.[4]—Flowers[5] diœcious; corolla of all regular; tube rather thin; lobes of limb 4, narrow acute. Anthers in male flower fertile, shortly dentate at base; in female sterile few free. Style girt at base with thick cylindrical disk; branches in male flower elongately lanceolate rather compressed; in female broader. Fruit of male plant narrow vacuous; of female linear, scabrous laterally compressed or 3-angular; pappus pales at angles 2, 3, subulate rather compressed.—A finally glabrous tree; but with puberulous innovations; leaves opposite penninerved dentate; capitules loosely corymbiform-cymose, often foliate; bracts of campanulate involucre few, 1–3-seriate; receptacle narrow flat and loaded with concave pales subtending flowers. (*St. Helena.*[6])

321. **Helenium** L.[7]—Flowers[8] 2-morphous; the radial female fertile or sterile, 1-seriate, sometimes 0; limb of ligulate corolla open, oftener elongately cuneate, 3–5-dentate or fid or lobed; the discal hermaphrodite fertile; limb of tubular corolla expanded, 4–5-dentate or fid, valvate. Anthers sagittate at slightly auri-

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[1] Nearly of *Clibadium*.

[2] ? Place.

[3] Spec. 1. *A. dubium* LESS.—*Monactis dubia* H. B. K. *Nov. gen. et spec.* iv. 287.

[4] *Char. gen.* (1776), 94, t. 47 (not GMEL., nor SCHREB., nor SM., nor FISCH., nor R. BR.).—POIR. *Lamk. Dict.* Suppl. iii. 326.—*Petrobium* R. BR. *Trans. Linn. Soc.* xii. 113.—DC. *Prodr.* v. 501.—ENDL. *Gen.* n. 2455.—B. H. *Gen.* ii. 355, n. 350. Name *Bartlingia* to be preferred, ex cl. F. MUELLER in litt.

[5] "Yellow."

[6] Spec. 1. *L. arborea* FORST.—*Spilanthus pseudogummifera* FORST. herb.—*S. arboreus* G. FORST. *Comm. gœtt.* ix. 66.—*S. tetrandra* ROXB. *Beats. App.* 325.—*Bidens arborea* ROXB. *loc. cit.* 301.—*Drimyphyllum arboreum* BURCH. herb.—*Petrobium arboreum* R. BR. *loc. cit.*

[7] *Gen.* n. 961.—GÆRTN. *Fruct.* ii. 438.—DC *Prodr.* v. 667.—CASS. *Dict.* lv. 262.—ENDL. *Gen.* n. 2603.—*Brassavola* ADANS. *Fam. des pl.* ii. 127 (ex ENDL.).—*Tetrodus* CASS. *Dict.* lv. 264, 272.—*Mesodetra* RAFIN. *Fl. ludov.* 141.—*Dugaldia* CASS. *Dict.* lv. 270.—*Oxylepis* BENTH. *Pl. Hartweg.* 87.—*Leptopoda* NUTT. *Gen. pl. n. amer.* ii. 174.—DC. *Prodr.* v. 658.—*Ambliolepis* DC. *Prodr.* v. 667.—*Espeletiopsis* SCH. BIP. herb.

[8] Yellow.

culate base. Style branches of hermaphrodite flowers slightly dilated at truncate apex; of female a little narrower recurved. Fruit obconical or obpyramidal, costate, subglabrous or sericeous; pappus pales few (4–8) acute, acuminate or rather obtuse, dentate or ciliate, membranous transparent.—Herbs oftener perennial, glabrous, puberulous, scabrous or sericeous above; leaves alternate, entire or few-dentate, often decurrent; capitules[1] stipitate, solitary or few-∞, loosely corymbiform-cymose; bracts of broad open involucre 1–2-seriate, often 2-morphous; the outer (sometimes connate at base) narrower herbaceous, sometimes finally reflexed; the inner broader, membranous or transparent, sometimes minute or 0; receptacle convex, finally more or less oblong or globular, without pales. (*Extratrop. N. and S. America.*[2])

322. **Gaillardia** Foug.[3]—Flowers oftener 2-morphous; the radial female or more rarely hermaphrodite fertile (sometimes neutral or 0); limb of ligulate corolla[4] open, 3–5-dentate, 3–5-fid or sometimes unequally enlarged; the discal hermaphrodite fertile (sometimes 0); tube of regular corolla[5] thin or short; limb cylindrical more or less expanded, 5-fid or 5-dentate. Anthers sagittate at base, entire or mucronate. Style branches of female flowers short or long hirsutely appendiculate. Fruit oblong-obconical, often villose; the radial sometimes smaller or vacuous; pappus pales few (5–15) transparent lanceolate, acuminate, aristate or more rarely obtuse.—Herbs, sometimes woody at base, often villose; leaves alternate or basal rosulate, entire, dentate or pinnatifid; capitules[6] stipitate; bracts of broad or hemispherical involucre 2–3-seriate, herbaceous or scarious at margin, appressed or reflexed; receptacle hemispherical or variously convex, bare or

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[1] Large or moderato.

[2] Spec. about 15. Jacq. *Ic. rar.* t. 593 (*Rudbeckia*).—Lamk, *Ill.* t. 688; *Journ. H. nat.* ii. t. 35.—H. B. K. *Nov. gen. et spec.* iv. 297, t. 410 (*Actinea*).—Labill. *Act. Soc. Hist. nat. Par.* i. t. 4.—Torr. *Whippl. Exp. Bot.* 51.—A. Gray, *Man.* (1856), 223; *Proc. Acad. Philad.* (1863), 65; *Proc. Amer. Acad.* vii. 358.—Chapm. *Fl. S. Unit. St.* 239.—*Bot. Reg.* t. 598.—*Bot. Mag.* t. 2994.—Walp. *Rep.* ii. 625 (*Leptopoda*), 628, 988 (*Leptopoda*), 990; vi. 175 (*Oxylepis*), 180; *Ann.* v. 237.

[3] *Mém. Acad. sc. Par.* (1786), 1, 6 (*Gaillarda*).—Cass. *Dict.* xviii. 17; lv. 264.—DC. *Prodr.* v. 651.—Endl. *Gen.* n. 2583.—*Galardia* Lamk, *Dict.* ii. 285; Suppl. ii. 695; *Ill.* t. 708.—Less. *Syn.* 237.—*Calonnea* Buch. *Ic.* (1786), t. 126.—*Virgilia* Diss. (ex DC.).—*Galordia* Reusch. *Nom.* 251.—*Guntheria* Spreng. *Syst.* iii. 356.—*Cercostylos* Less. *Syn.* 239.—*Polypteris* Less. *Linnæa* vi. 218 (not Nutt.).—*Agassizia* A. Gray et Engelm. *Journ. Bost. Soc. Nat. Hist.* vi. 229.

[4] Yellow, white (?), purple, violet or 2-coloured.

[5] Yellow, purplish, or fuscate, oftener hirsute, villose or resinous-spotted.

[6] Large or moderate, often showy.

sometimes rigidly setose between the flowers.[1] (*Extratrop. N. and S. America.*[2])

323 ? **Psathyrotes** A. Gray.[3]—Flowers[4] hermaphrodite fertile, 1-morphous; limb of tubular corolla elongate cylindrical, often villose or glandular at apex, 5-fid. Anthers minutely sagittate-auriculate at base. Style branches obtuse at apex, truncate or scarcely appendiculate. Fruit oblong conical or obpyramidal sericeous; pappus hairs ∞, unequal transparent or more rarely paleaceous and divided into numerous hairs.—Low branched herbs, tomentose, lanate or glandular; leaves alternate, entire, angular or incised; capitules[5] stipitate, solitary or cymose; peduncles sometimes very short few in foliate cymes.[6] (*West N. America.*[7])

324. **Flaveria** J.[8]—Flowers[9] fertile, 2-morphous; female 1 the outermost (sometimes 0); limb of ligulate corolla small, entire or very shortly 2-lobed, concave, subequal to or shorter than style; hermaphrodite few or 1; limb of regular tubular corolla subcam-

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[1] Sections of the genus are:

Actinella Nutt. *Gen. pl. amer.* ii. 173 (not Pers.).—B. H. *Gen.* ii. 414, n. 503.—*Picraerdenia* Hook. *Fl. bor.-am.* i. 317, t. 108.—DC. *Prodr.* v. 665.—*Philozera* Buckl. *Proc. Acad. Philad.* (1861), 459: leaves basal or alternate, entire or lobed; bracts of broadly hemispherical involucre appressed; flowers all fertile; style branches of hermaphrodite flowers truncate and penicillate; pappus pales lanceolate aristate 5–12. (*N. America.*)

Cephalophora Cav. *Icon.* vi. 79, t. 599.—DC. *Prodr.* v. 662.—Endl. *Gen.* n. 2599.—B. H. *Gen.* ii. 413, n. 500.—*Actinea* J. *Ann. Mus.* ii. 425, t 61.—*Græmia* Hook. *Exot. Fl.* t. 189: flowers 1–2-morphous (radial sometimes 0); ligules 3-fid; fructiferous capitules globose; leaves alternate, entire, dentate or pinnatifid; involucre subhemispherical. (*Extratrop. S. Amer.*)

Hymenoxys Cass. *Dict.* lv. 278.—DC. *Prodr.* v. 661.—Deless. *Ic. sel.* iv. t. 42.—B. H. *Gen.* ii. 415, n. 504.—A. Gray, *Proc. Amer. Acad.* xiii. (1878), 375.

[2] Spec. about 22. Hook. *Icon.* t. 146 (*Hymenoxis*).—Torr. et Gr. *Fl. N.-Amer.* ii. 381 (*Actinella*).—Torr. *Whippl. Exp. Bot.* 51 (*Actinella*).—Sweet, *Brit. flow. Gard.* ser. 2, t. 267.—DC. *Prodr.* vii. 293, n. 5 (*Hymenoxys*).—H. B. K. *Nov. gen. et spec.* iv. t. 411 (*Actinea*).—Kn. et Westc. *Fl. Cab.* t. 27.—Phil. *Fl. atacam.* 34; *Linnœa*, xxix. 7; xxxiii. 169 (*Cephalophora*).—A. Gray, *Chl. bor.-amer. Mem. Amer. Acad.* ser. 2, iii. t. 4; *Proc. Amer. Acad.* vii. 359 (*Actinella*).—*Bot. Reg.* t. 1186.—*Bot. Mag.* t. 1602, 2940, 3368, 3551, 6081.—Walp. *Rep.* ii. 624; 627 (*Cephalophora*), 988; vi. 177, n. 1 (*Hymenoxys*), 179 (*Actinella*); *Ann.* i. 416 (*Cephalophora*); ii. 874; 878 (*Actinella*); v. 236 (*Actinella*).—*Actinella* Pers. (not Nutt.), sometimes referred to *Cephalophora*, very similar (A. Gray) to *Helenium*.

[3] *Pl. Wright.* ii. 100, t. 13.—B. H. *Gen.* ii. 415, n. 506.

[4] Yellow (or white ?).

[5] Moderate or small.

[6] An anomalous sect. of the genus apparently is *Trichoptilium* A. Gray, *Torr. Emor. Exp. Bot.* 97; *Pacif. Railr. Expl. Bot.* t. 5.—B. H. *Gen.* ii. 415, n. 505, the leaves of which are incised and pappus pales ∞-fissus.

[7] Spec. 4. Nutt. *Journ. Acad. Philad.* ser. 2, i. 179 (*Bulbostylis* sect. *Psathyrotus*).—A. Gray, *Mex. Bound.* 74 (*Peucephyllum*); *Proc. Amer. Acad.* vii. 363; ix. 206.—Walp. *Ann.* v. 163.

[8] *Gen.* 186.—Less. *Syn.* 233.—DC. *Prodr.* v. 635.—Endl. *Gen.* n. 2571.—B. H. *Gen.* ii. 407, n. 484.—*Vermifuga* R. et Pav. *Prodr.* 114, t. 24.—*Brotera* Spreng. *Schrad. Journ.* ii. 186, t. 5 (not Cav.).—*Broteroa* DC. *Prodr.* v. 635.—Endl. *Gen.* n. 2572.—*Nauemburgia* W. *Spec.* iii. 2393 (not Mœnch).

[9] Yellow.

panulate, 5-fid or dentate. Anthers subentire at obtuse base. Style branches short, erect or recurved, truncate at apex. Fruit oblong, without pappus, smooth between the 8-∞ ribs.—Glabrous or puberulous herbs, leaves opposite narrow, entire or dentate, sometimes 3-nerved; capitules ∞, narrow sessile, 1-lateral, in dense corymbiform-ramose or short cymes or solitary, sometimes in densely glomerate dichotomies; involucral floral leaves few; involucre long ovoid, cylindrical or narrow; bracts few (2–6), imbricate. (*Warm N. and S. America, Australia.*[1])

325. **Sartwellia** A. Gray[2].—Flowers[3] fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla small open ovate entire; the discal hermaphrodite; limb of tubular corolla campanulate, 5-fid. Anthers obtuse at base. Style branches of hermaphrodite flowers truncate penicillate at apex. Fruit oblong linear, 10-costate; pappus cupular fimbriate-denticulate (in ray very short).—An erect glabrous herb; leaves opposite filiform entire; capitules[4] numerous in densely corymbiform cymes; bracts of narrow-campanulate involucre concave subequal, 1-seriate; receptacle nearly flat bare. (*Mexico.*[5])

326. **Cadiscus** E. Mey.[6]—Flowers fertile; the radial ∞, female and 1-seriate; limb of ligulate corolla small open entire; the discal hermaphrodite; limb of regular corolla cup-shaped, 5-fid; tube slender. Anthers obtuse at base. Style branches of hermaphrodite flowers truncate penicillate at apex; of females thinner recurved, capitellate at apex. Fruit linear, 10–12-costate; pappus hairs 10–12, aristate and continuous with ribs of pericarp, more or less compressed subpaleaceous, thinly barbellate.—A glabrous marshy herb; leaves alternate, elongate, amplexicaul at membranous base entire; capitules terminal and opposite leaves stipitate; bracts of campanulate involucre 1-seriate more or less deeply valvately connate; receptacle flat and bare. (*South Africa.*[7])

327. **Schkuhria** Roth.[8]—Flowers[9] all fertile, 1–2-morphous; the

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[1] Spec. 6, 7. Cav. *Icon.* t. 4, 223 (*Milleria*).—Benth. *Fl. austral.* iii. 546.—Remy, *C. Gay Fl. chil.* iv. 277.—*Bot. Mag.* t. 2400.—Walp. *Ann.* ii. 870.

[2] *Pl. Wright.* i. 122, t. 6.—B. H. *Gen.* ii. 407, n. 483.

[3] Yellow.

[4] Very small.

[5] Spec. 1, not seen by us. *S. Flaveriæ* A. Gray.—Walp. *Ann.* v. 231.

[6] In *DC. Prodr.* vii. 254.—Endl. *Gen.* n. 3032 ^{3}.—B. H. *Gen.* ii. 408, n. 485.

[7] Spec. 1. *C. aquaticus* E. Mey.—Harv. and Sond. *Fl. cap.* iii. 134.

[8] *Cat.* i. 116 (1797).—DC. *Prodr.* v. 654.—Endl. *Gen.* n. 2588.—B. H. *Gen.* ii. 403, n. 469 (not Mœnch).—*Tetracarpum* Mœnch, *Meth.* Suppl. 241 (ex DC.).—*Achyropappus* H. B. K. *Nov. gen. et spec.* iv. 257, t. 390.—DC. *Prodr.* v. 654.—*Chamæstephanum* W. *Ges. Nat. Fr. Berl. Mag.* (1807), 140.—*Mieria* Llav. et Lex. *N. veg. Descr.* ii. 9.—*Hopkirkia* DC. *Prodr.* v. 660.

[9] Yellow.

radial female, 1-seriate or 0; limb of ligulate corolla oftener short, entire or few-dentate, sometimes unequally campanulate, 5-fid; the discal hermaphrodite; limb of regular corolla campanulate or cylindrical, 5-fid or dentate. Anthers obtuse entire, emarginate or shortly auriculate at base. Style branches of hermaphrodite flowers flattened or subterete, obtuse, rounded or longer or shorter appendiculate. Fruit more or less elongate, obpyramidal or linear-angled; pappus pales 4–10, opaque or subenervate in the middle.—Small shrubs or subshrubby herbs, glabrous, pubescent, tomentose or glandular; leaves opposite or alternate, entire or dissected; capitules[1] pedunculate, solitary or corymbiform-cymose; involucre very variable in form; bracts few or sub-2-seriate, free or connate quite at base, sometimes coloured or scarious at margin; the outer few sometimes evolute.[2] (*Warm N. and S. America.*[3])

328. **Hymenopappus** LHÉR.[4]—Flowers[5] hermaphrodite fertile, oftener 1-morphous;[6] tube of regular corolla slender; lobes or teeth of subcampanulate limb 5, recurved. Anthers entire or emarginate at base. Style branches linear sometimes dilated above, obtusely or acutely appendiculate. Fruit obpyramidal, 4–5-angled or 10–20-costate; pappus pales ∞, short or elongate, scarious, transparent, obtuse or acute, sometimes 0.—Perennial herbs, hoary tomentose or more rarely glabrous; leaves alternate or rosulate at base, 1–2-pinnatisect, sometimes partly entire; capitules[7] in loose, corymbiform cymes; bracts of subhemispherical or campanulate involucre unequal or subequal, 1–2-seriate, rather acute, obtuse or petaloid-membranous; receptacle

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[1] Small or moderate.

[2] Sections of the genus are:

Eriophyllum LAGASC. *Elench.* 28 (1816).—*Bahia* LAGASC. *loc. cit.* 30.—DC. *Prodr.* v. 656.—ENDL. *Gen.* n. 2591.—B. H. *Gen.* ii. 402, n. 468.—*Phialis* SPRENG. *Gen.* ii. 631 (ex DC.).—*Tricophyllum* NUTT. *Gen. amer.* ii. 166.—*Stylesia* NUTT. *Trans. amer. Phil. Soc.* ser. 2, vii. 377.—*Virletia* SCH. BIP. herb. (ex B. H.): stem woody or herbaceous; leaves opposite or alternate, often tomentose-lanate; capitules solitary or cymose; involucral bracts sub-2-seriate; style branches acute or obtuse; pappus pales nearly nerveless (4–10). (*Extratrop. N. and S. Amer.*)

Hymenothrix A. GRAY, *Fl. Fendler.* 102.—B. H. *Gen.* ii. 403, n. 470: stem herbaceous; leaves alternate dissected; capitules corymbiform cymose; involucral bracts sub-2-seriate; inner coloured or scarious; outer sometimes evolute; anthers minutely auriculate at base; style branches appendiculate; pappus pales aristiform barbellate. (*Mexico.*)

[3] Spec. about 30. LAMK, *Journ. Hist. nat.* ii. t. 31 (*Pectis*).—LINK et OTT. *Ic. pl. rar.* t. 39 (*Achyropappus*).—TORR. *Sitgr. Exp. Bot.* t. 3 (*Bahia*), 6 (*Hymenothrix*); *Whippl. Exp. Bot.* 49.—A. GRAY, *Emor. Exp. Bot.* 95; *Proc. Amer. Acad.* v. 184; vii. 357 (*Burrielia*).—WEDD. *Chl. andina.* i. 73, t. 14 B.—WALP. *Rep.* ii. 625; 626, 989 (*Bahia*); vi. 175; *Ann.* ii. 875; 876 (*Bahia*), 878 (*Hymenothrix*), 893 (*Monolopia*); v. 235; 236 (*Bahia, Hymenothrix*).

[4] *Diss.* c. icon. (ex DC. *Prodr.* v. 658.—LESS. *Syn.* 238.—ENDL. *Gen.* n. 2591.—B. H. *Gen.* ii. 402, n. 466.—*Rothia* LAMK. *Journ. Hist. nat.* i. 16, t. 1; *Ill.* t. 667 (not of others).

[5] White, flesh-coloured or yellow.

[6] Or sometimes 2-morphous; limb of outer large and open.

[7] Moderate or small.

bare or more or less foveolate.[1] (*N. America, especially west.*[2])

329. **Riddellia** Nutt.[3]—Flowers[4] fertile, 2-morphous; the radial female, 1-seriate; blade of ligulate corolla open broad, 3-lobed; the discal hermaphrodite; tube of corolla short; limb cylindrical little expanded, 5-dentate or 5-fid. Anthers obtuse at base. Style branches of hermaphrodite flowers truncately capitellate at apex; of female more slender recurved. Fruit elongate, obtusely angled, striate; pappus pales ∞, unequal, transparent, ciliate or lacerate at margin.—Perennial herbs or subshrubby at base; indumentum various, sometimes lanate; leaves alternate, linear entire; capitules[5] solitary or in terminal contracted corymbiform cymes and very shortly stipitate; bracts of subcampanulate or tubular involucre often few tomentose; the outer oftener smaller. (*West N. and S. America.*[6])

330. **Hulsea** Torr. and Gray.[7]—"Flowers[8] fertile, 2-morphous; the radial female, 1-seriate numerous; limb of ligulate corolla narrow open, 2–3-dentate; the discal hermaphrodite; limb of tubular corolla cylindrical or narrow-campanulate, 5-fid. Anthers minutely dentate at base. Style branches of hermaphrodite flowers rounded at dilated apex. Fruit linear, compressed or sub-4-angled, sericeous; pappus pales 4, short or oblong lacerate transparent.—Annual or perennial herbs, viscous-hairy or hoary lanate at base; leaves alternate or basal, entire or dentate; capitules[9] solitary; bracts of broad hemispherical involucre herbaceous narrow, 2–3-seriate; receptacle flat foveolate." (*California.*[1])

331. **Actinolepis** DC.[2]—Flowers[3] fertile; the radial female,

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[1] Sect. of the genus apparently is *Chænactis* DC. *Prodr.* v. 659.—Endl. *Gen.* n. 2593.—B. H. *Gen.* ii. 401, 1235, n. 465.—*Macrocarphus* Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 376.—*Acarphæa* A. Gray, *Pl. Fendler.* 98; *Emor. Exp. Bot.* 95, t. 32.—*Acicarphæa* Walp. *Ann.* ii. 877: style branches rather more acute or subulate; pappus pales unequal exaristate or 0; involucral bracts narrow.

[2] Spec. about 20. Torr. *Stansb. Utah*, t. 6; *Whippl. Exp. Bot.* 48 (*Chænactis*).—A. Gray, *Emor. Exp. Bot.* 94; *Proceed. Amer. Acad.* vi. 545; x. 73 (*Chænactis*).—Eaton, *Fort. parall. Exp. Bot.* 171, t. 18 (*Chænactis*); Walp. *Rep.* ii. 626, 989; vi. 176; 177 (*Chænactis*); *Ann.* ii. 876.

[3] *Trans. Amer. Phil. Soc.* ser. 2, vii. 371.—B. H. *Gen.* ii. 401, n. 463.—*Psilostrophe* DC. *Prodr.* vii. 261.—Endl. *Gen.* n. 3032 [7].

[4] Yellow or golden.

[5] Rather large or small cymose.

[6] Spec. 3. A. Gray, *Proc. Amer. Acad.* vii. 358.—Torr. *Emor. Rep. Bot.* App. t. 5.—Walp. *Rep.* vi. 172; *Ann.* ii. 872.

[7] *Emor. Exp. Bot.* 98.—B. H. *Gen.* i. 401, n. 464.

[8] "Yellow or radial purplish."

[9] Rather large.

[1] Spec. 6. A. Gray, *Proc. Amer. Acad.* vi. 547; vii. 359.—Torr. et Gray, *Williams. Exp. Bot.* t. 13.

[2] *Prodr.* v. 655 (1836).—B. H. *Gen.* ii. 399, n. 468.—*Ptilomeris* Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 381.—*Hymenoxys* Torr. et Gray, *Fl. N.-Amer.* ii. 380 (not Cass.).

[3] Yellow.

1-seriate; limb of ligulate corolla open, entire or 2–3-dentate; the discal hermaphrodite; limb of tubular corolla more or less widely campanulate, 5-fid. Anthers entire or subentire at obtuse base. Style branches of hermaphrodite flowers obtuse at apex or acutely appendiculate. Fruit linear, subterete or angular; pappus hairs[1] ∞, or few, sometimes 0, obtuse, acute or aristate, or sometimes barbellate more or less connate.—Annuals, oftener small, pilose, tomentose or lanate; leaves alternate, narrow, incised, lobed or 1–2-pinnatifid; capitules[2] stipitate or subsessile; bracts of cylindrical-campanulate involucre 4–∞, concave, enclosing radial fruit, herbaceous and often externally lanate.[3] (*California.*[4])

332. **Lasthenia** Cass.[5]—Flowers[6] nearly of *Schkuhria*; the discal hermaphrodite fertile; the radial female, 1-seriate; involucre cupular-campanulate, 5–∞-dentate. Limb of discal corolla subcylindrical or narrow (*Monolopia*[7]) or broader-campanulate (*Hologymne*,[8] *Eulasthenia*). Style branches rounded at apex or obtusely appendiculate (*Monolopia*), oftener capitately truncate (*Eulasthenia*). Fruit oblong, without pappus (*Hologymne*, *Monolopia*) or crowned with ∞ aristate pales (*Eulasthenia*).—Glabrous or more rarely tomentose (*Monolopia*) herbs; leaves alternate or opposite; capitules pedunculate; receptacle convex without pales (*California*, *Chili.*[9])

333. **Hecubæa** DC.[10]—Flowers[11] fertile, 2-morphous; the radial female, 1-seriate; limb of subligulate corolla 3–4-fid or subcampanulate open, internally divided nearly to base, at apex 4–5-fid; lobes oftener elongate; the discal hermaphrodite; tube of regular corolla short; limb narrow-campanulate, 5-fid. Anthers obtuse at base shortly auriculate. Style branches of hermaphrodite flowers open, compressed-dilated to apex truncate, not or scarcely

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[1] White or transparent.

[2] Moderate or small.

[3] Sect. of the genus is *Syntrichopappus* Torr. *Whippl. Exp. Bot.* 50, t. 15.—B. H. *Gen.* ii. 402, n. 467: involucral bracts 4, 5; style branches appendiculate; pappus hairs paleaceous, sometimes connate, barbellate; leaves 3-lobed.

[4] Spec. about 6. Hook. *Icon.* t. 325; *Bot. Mag.* t. 3828 (*Hymenoxys*).—Torr. *Emor. Exp. Bot.* t. 33.—A. Gray, *Proc. Amer. Acad.* vi. 546; ix. 167.

[5] *Op. phyt.* iii. 88.—DC. *Prodr.* v. 664.—Lindl. *Bot. Reg.* t. 1780, 1823.—Endl. *Gen.* n. 2609.—B. H. *Gen.* ii. 400, n. 460.—*Rancagua* Pœpp. et Endl. *Nov. gen. et spec.* i. 15, t. 24, 25.—Endl. *Gen.* n. 2610.

[6] Yellow, sometimes pilose at apex.

[7] DC. *Prodr.* vi. 74.—Endl. *Gen.* n. 2674.—B. H. *Gen.* ii. 400, n. 461.—*Spiridanthes* Fenzl, *Endl. Gen.* Suppl. ii. 105 (from the author himself).

[8] Bartl. *Ind. sem. H. gœtt.*; *Linnæa*, xiv. *Lit.* 125.—*Xantho* Remy, *Ann. sc. nat.* sér. 3, xii. 191.

[9] Spec. 5. Hook. *Icon.* t. 343, 344 (*Monolopia*).—Remy, *C. Gay Fl. chil.* iv. 260.—*Bot. Mag.* t. 3839.—Walp. *Rep.* ii. 635; vi. 180 (*Rancagua*).

[10] *Prodr.* v. 665.—Deless. *Ic. sel.* iv. 18, t. 43.—Endl. *Gen.* n. 2606.—B. H. *Gen.* ii. 400, n. 462.—H. Bn, *Bull. Soc. Linn. Par.* 286.

[11] Yellow.

penicillate; of female thinner recurved. Fruit (glabrous) subovoid, 8–10-costate; pappus 0. A glabrescent herb; the basal leaves numerous very long-lanceolate entire membranous and highly costate; the cauline smaller subdecurrent at base; capitules terminal 1, 2, long-stipitate; involucral bracts sub-2-seriate hirtellate; the outer[1] broader ovate-acute; the inner much narrower acute; receptacle slightly convex, or later more raised bare; top of the penduncle under capitule obconically dilated.[2] (*Mexico.*[3])

334. **Baeria** Fisch. and Mey.[4]—Flowers[5] fertile (or the inner partly sterile), 2-morphous; the radial female, 1-seriate or few; limb of ligulate corolla more or less open, 2–3-dentate; the discal hermaphrodite; tube thin; limb campanulate, 5-fid or dentate. Style[6] branches short or linear, with more or less obtuse or acute appendages, often highly revolute. Fruit[7] linear-obpyramidal, compressed or angular; pappus hairs aristate 2–5, rather rigid unequal, sometimes dilated at base or short transparent, or sometimes 0.—Annuals, often slender, linear, entire, pinnatifid or variously dissected; capitules[8] terminal or stipitate in uppermost axils; involucre campanulate, oblong or subhemispherical; bracts few or 1–2-seriate, subequal herbaceous; receptacle more or less elongate and oftener loaded with the stems of the fruit and hence scrobiculate.[9] (*California.*[10])

335. **Oxypappus** Benth.[11]—"Flowers[12] fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla open, 3-dentate; the discal hermaphrodite; limb of tubular corolla little expanded, 5-dentate. Anthers entire at base. Style branches narrowly and

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[1] Fuscate.

[2] Like *Tagetes.*

[3] Spec. 1. *H. scorzoneræfolia* DC.

[4] *Ind. sem. H. petrop.* ii. (1835), 29.—DC. *Prodr.* vii. 254.—Endl. *Gen.* n. 2607.—B. H. *Gen.* ii. 309, n. 457.

[5] Yellow.

[6] Girt at base by a disk sometimes conical and there suddenly attenuated.

[7] Glabrous, pilose or muricate.

[8] Small or modorate.

[9] Sections of the genus are:

Burrielia DC. *Prodr.* v, 663.—Endl. *Gen.* n. 2601.—B. H. *Gen.* ii. 398, n. 456: leaves linear; style branches pointed; ligules few; pappus aristæ 1–5; bracts of oblong involucre free thin; receptacle thinner.

Lasiobaeria (the type of which is *Burrielia lanosa* A. Gray): leaves alternate lanate; receptacle nearly flat; anthers thinly setaceous-apiculate.

Dichæta Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 383: leaves oftener pinnatilobed or dentate; pappus of transparent aristæ, or a few pales or 0; bracts of receptacle 1–2-seriate.

[10] Spec. 6, 7. Torr. *Whippl. Exp. Bot.* 50 (*Burrielia*).—A. Gray, *Emor. Exp. Bot.* 96; *Proc. Amer. Acad.* vii. 358 (*Burrielia*); ix. 195, 196, not.—*Bot. Mag.* t. 3758 (*Burrielia*).—Walp. *Rep.* ii. 627, 989 (*Burrielia*).

[11] *Sulph. Bot.* 118, t. 42; *Gen.* ii. 398, n. 455.

[12] Yellow.

acutely appendiculate; pappus pales 3–5, aristæform and shortly dilated at base.—An annual (or perennial?) pubescent or hirsute herb; stem slender; leaves opposite, or the uppermost alternate, dentate or entire; capitules (small) in loose compound cymes; bracts of campanulate involucre subequal linear carinate; receptacle bare convex or finally conical.[1]" (*Mexico.*[2])

336. **Perityle** Benth.[3]—Flowers[4] fertile (or the inmost sterile), 2-morphous; the radial female, 1-seriate; limb of ligulate corolla open, entire or 2–3-dentate; the discal hermaphrodite; limb of tubular corolla more or less expanded, 4-fid or dentate. Anthers entire at base or shortly auriculate. Style branches of hermaphrodite flowers obtuse or acutely appendiculate. Fruit compressed ovate-oblong; pappus hairs equal or unequal, connate at base in a short subcartilaginous cupule; 2 or few more or less produced in aristæ.—Herbs or undershrubs, glabrous, glandular or variously pilose; leaves opposite, or the upper alternate, narrow or ovate-orbiculate, dentate or incised; capitules[5] solitary or in corymbiform cymes; bracts of subcampanulate involucre linear or rather broader, concave, sometimes carinate at back; receptacle bare more or less convex or conical.[6] (*West. N. and S. America.*[7])

337. **Palafoxia** Lagasc.[8]—Flowers[9] fertile, 2-morphous or (by defect of the radial) 1-morphous; the radial female, 1-seriate or 0; limb of ligulate corolla irregular or equally 3-fid; the discal hermaphrodite; tube slender,[10] sometimes curved; limb suddenly campanulate, 5-lobed or 5-partite. Anthers elongate,[11] entire at base or emarginate. Style branches of hermaphrodite flowers thin, linear- or subulate-appendiculate.[12] Fruit narrow angular;

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[1] A genus (known to us only by figure) sometimes referred to *Pectis*, "far removed by absence of glandules, form of style and other characters" (Benth.).

[2] Spec. 1. *O. scaber* Benth.—Walp. *Rep.* vi. 178.—*Chrysopsis ? scabra* Hook. and Arn. *Beech. Voy. Bot.* 434.—Walp. *Rep.* ii. 588.

[3] *Sulph. Bot.* 118, t. 42.—B. H. *Gen.* ii. 398, 454.—A. Gray, *Proc. Amer. Acad.* ix. 194.

[4] Yellow or (?) radial white.

[5] Small or moderate.

[6] Sect. of the genus is *Laphamia* A. Gray, *Pl. Wright.* i. 99, t. 9.—B. H. *Gen.* ii. 398, n. 453.—*Monothrix* Torr. *Stansb. Utah Exp.* 389, t. 7: involucral bracts narrower; style branches often pointed; pappus hairs unequal ∞, 1, 2, larger, aristate or 0; stem subshrubby, often canescent.

[7] Spec. 13, 14. Torr. *Whippl. Exp. Bot.* 44; *Emor. Rep.* 142; *Emor. Exp. Bot.* 82.—Walp. *Rep.* vi. 125; *Ann.* v. 185; 189 (*Laphamia*).

[8] *Elench. H. matrit.* 26.—DC. *Prodr.* v. 124.—Endl. *Gen.* n. 2265.—B. H. *Gen.* ii. 405, n. 465.—*Paleolaria* Cass. *Bull. Soc. philom.* (1816), 198; *Dict.* xxvii. 256.—*Polypteris* Nutt. *Gen. amer.* ii. 139 (not DC.).

[9] White, pink or purplish.

[10] Dilated at base around disk.

[11] Finally dry solute.

[12] Contorted before anthesis.

pappus pales ∞, or few (6–8) obtuse or truncate ciliately dentate or acute or aristate, hardened in the middle.—Herbs, sometimes shrubby at base, scabrous or glandular; leaves alternate, or the lower opposite, narrow entire; capitules in loose corymbiform cymes; bracts of subcampanulate involucre herbaceous or partly membranous, obtuse or acuminate, 1–2-seriate; receptacle flat, bare or minutely foveolate. (*Warm N. America.*[1])

338? **Florestina** Cass.[2]—Flowers[3] hermaphrodite fertile, 1-morphous; tube of regular corolla short; limb campanulate, 5-fid. Anthers rather acutely auriculate at base. Style branches with long subulate hirsute appendages. Fruit elongate cuneate, 4–5-costate; pappus pales few (6–10) unequally obovate, obtuse or retuse subtransparent, imbricate.—Glabrous or hairy annuals; leaves alternate, pedately or pinnately 3–7-partite; the uppermost often entire; capitules[4] in corymbiform cymes; bracts of subcampanulate involucre few, scarious coloured at apex; receptacle flat and bare.[5] (*Mexico.*[6])

339? **Eatonella** A. Gray.[7]—"Capitules heterogamous, about 20-flowered; radial flowers female ligulate, sometimes absent; discal corollas dilated 4–5-dentate; style branches short truncate. Receptacle flat bare. Fruit compressed callose-marginate villose; pappus pales 2 or few very broad enervate.—Annuals or biennials lanate alternifoliate; capitules subsessile rather small.[8] (*California.*)

340? **Rigiopappus** A. Gray.[9]—"Flowers fertile; the radial female 1-seriate; limb of ligulate corolla small open; the discal hermaphrodite; limb of thin tubular corolla scarcely expanded elongate shortly 3–4-fid. Anthers obtuse subentire at base. Style branches of hermaphrodite flowers short subulately appendiculate. Fruit linear angled; pappus pales 4, 5, smooth rigid subcorneous.—A slender pilose annual; leaves alternate linear entire; capitules[1] solitary terminal; bracts of narrow turbinate-campanulate involucre herbaceous narrow, 1–2-seriate; receptacle small flat and bare."[2] (*West. N. America.*)

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[1] Spec. about 6. Cav. *Icon.* t. 205 (*Ageratum*).—Bart. *Fl. Amer. sept.* t. 46 (*Stevia*).—Hook. *Icon.* t. 148.—A. Gray, *Proc. Amer. Acad.* viii. 291.—*Bot. Mag.* t. 2132, 5549.

[2] *Bull. Soc. philom.* (1815), 175; *Dict.* xvii. 155; lv. 296.—DC. *Prodr.* v. 655.—Endl. *Gen.* n. 2589.—B. H. *Gen.* ii. 405, n. 475.—*Lepidopappus* Sess. et Moc. (ex DC.).

[3] Whitish or purplish.

[4] Moderate or small.

[5] (?) Rather a sect. of *Palafoxia.*

[6] Spec. 2. Cav. *Ic.* iv. 33 (*Stevia*).—Lag. *N. gen.* 28, n. 356 (*Hymenopappus*).—Less. *Syn.* 239 (*Achyropappus*).—Nutt. *Journ. sc. Philad.* (1821), 121 (*Stevia*).

[7] *Proc. Amer. Acad.* xvii. 215.

[8] Spec. 1. *P. floribunda*, A. Gray.

[9] *Proc. Amer. Acad.* vi. 548.—B. H. *Gen.* ii. 406, n. 477.

341? **Galeana** Llav. and Lex.[3]—"Flowers[4] 2-morphous; the radial few female fertile (or 0); corolla ligulate small; the discal hermaphrodite fertile; corolla tubular 5-dentate. Anthers . . . ? Style . . . ? Radial fruit concave, subdentate at margin; the discal prismatic; pappus 0.—Herbs; leaves opposite, sagittate or hastate (succulent); capitules (small) subracemose at ends of branches, or solitary in dichotomies and long pedunculate; involucral bracts 5, carinate; receptacle bare.[5]" (*Mexico.*)

342. **Villanova** Lag.[6]—Flowers[7] all fertile (or the inmost sometimes sterile), 2-morphous; the radial female, 1-seriate; limb of ligulate corolla oftener broad, 2–3-dentate; the discal hermaphrodite; limb of tubular corolla more or less broadly campanulate, 5-fid or dentate. Anthers minutely auriculate at base. Style branches of hermaphrodite flowers obtuse at apex or shortly and acutely appendiculate; of female thinner and narrower. Fruit oblong, attenuate at base, often 3-quetrous or dorsally compressed, or alate, glabrous; pappus 0.—Pubescent or glandular herbs;[8] leaves opposite, or the upper alternate, 3-nately or pinnately dissected or incised; capitules[9] in more or less compound corymbiform cymes; bracts of subcampanulate involucre subequal 1–2-seriate; receptacle bare. (*Warm west. N. and S. America.*[10])

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[1] Rather small.

[2] A monotypic genus, unknown to us, apparently closely allied to *Florestina* and *Palafoxia* (B. H.).

[3] *Nov. veg. Descr.* i. 12.—DC. *Prodr.* vii. 257.—Endl. *Gen.* 502.—B. H. *Gen.* ii. 406, n. 479.

[4] "Yellow."

[5] A plant unknown to almost all; perhaps of the same genus (B. H. *loc. cit.* n. 478) *Pericome* A. Gray, *Pl. Wright.* ii. 81.—*Galinsogeopsis* Sch. bip. *Seem. Her.* 306, including 2 Mexican species, the flowers of which are said to be 1–2-morphous; style branches acute; fruit ciliately marginate; pappus (small) ciliate-lacerate, divided nearly to base; capitules closely corymbose; involucral bracts more or less connate in a cupule, 1-seriate.

[6] *Elench. H. matrit.* 31 (not Orteg.).—DC. *Prodr.* vi. 75.—Endl. *Gen.* n. 2678.—B. H. *Gen.* ii. 404, n. 474.—*Unxia* H. B. K. *Nov. gener. et spec.* iv. 279, t. 401, 402 (not L.).—*Chlamysperma* Less. *Syn.* 256.—DC. *Prodr.* vi. 75.—Endl. *Gen.* n. 2677.—*Vasquezia* Phil. *Fl. atacam.* 31, t. 5 (ex B. H.).

[7] Yellow.

[8] Sometimes simple.

[9] Moderate or small.

[1] Spec. about 4. Hook. and Arn. *Beech. Voy.*

343? **Blennosperma** Less.[1]—Flowers[2] (nearly of *Villanova*) 2-morphous; the radial fertile; the discal hermaphrodite sterile; style undivided. Fruit oblong, 8–10 costate, without pappus; the discal vacuous. Other characters of *Villanova*.[3]—Branched annuals, glabrous or villose above; leaves alternate pinnatisect; capitules[4] terminal pedunculate; bracts of involucre few, sometimes connate quite at base; receptacle flat and bare. (*California, Chili*.[5])

344? **Closia** Remy.[6]—Flowers[7] fertile (nearly of *Villanova*), 2-morphous; the radial female; limb of ligulate corolla 3-dentate; the discal hermaphrodite; limb of tubular corolla narrow-campanulate, 4–5-dentate. Anthers minutely auriculate at base. Style branches of hermaphrodite flowers shortly and acutely appendiculate. Fruit oblong rather compressed; pappus very short annular ciliolate.—Branching herbs; leaves alternate dissected; capitules loosely cymose; bracts of subhemispherical involucre oblong, 1-2-seriate; receptacle rather convex bare.[8] (*Chili*.[9])

345? **Amauria** Benth.[10]—"Flowers fertile, 2-morphous; the radial female; limb of ligulate corolla open, scarcely dentate; the discal hermaphrodite; corolla tubular, 5-dentate. Style branches subulate. Fruit[11] linear angular; pappus 0.—A branched viscous-pubescent undershrub (?); leaves opposite, or the upper alternate petiolate suborbiculate incised-dentate; capitules loosely corymbose few; bracts of hemispherical involucre narrow, 2–3-seriate; the outer subherbaceous; the inner subscarious; receptacle flat and bare." (*California*.[12])

Bot. t. 64 (*Chlamysperma*).—Port. et Coult. *Syn. Fl. Color*. 75.—A. Gray, *Pl. Fendler*. 104 (*Amauria*).—*Bot. Mag*. t. 6422.—Walp. *Rep*. ii. 637 (*Chlamysperma*); vi. 208; *Ann*. ii. 883 (*Amauria*); v. 248.

[1] *Syn*. 267.—DC. *Prodr*. vii. 288.—B. H. *Gen*. ii. 404, n. 473.—*Apalus* DC. *Prodr*. v. 507.—*Hapalus* Endl. *Gen*. n. 2464.—*Unxia* Coll. *Mem. Ac. taur*. xxxviii. 37, t. 32 (not L., nor K.).—*Coniothele* DC. *Prodr*. v. 531.—Endl. *Gen*. n. 2487.

[2] Yellow.

[3] Of which rather a sect.?

[4] Small.

[5] Spec. 2. Remy, *C. Gay Fl. chil*. iv. 298, t. 48.—Walp. *Rep*. ii. 974.

[6] *C. Gay Fl. chil*. iv. 119, t. 46, fig. 2.—B. H. *Gen*. ii. 404, n. 472.

[7] White; radial yellow.

[8] A genus of minor importance. ? If *Blennosperma*. Four species described by Philippi (*Fl. atacam*. 31) "perhaps not all congeneric" (B. H.).

[9] Spec. legitima 1. *G. Cotula* Remy, *loc. cit*. 120.—Walp. *Ann*. ii. 847.

[10] *Sulph. Bot*. 31.—B. H. *Gen*. ii. 404, n. 471.

[11] "Black."

[12] Spec. 1. *A. rotundifolia* Benth.

346? **Amblyopappus** Hook. and Arn.[1]—Flowers[2] fertile, 2-morphous; the radial female, 1-seriate; corolla tube shorter than style, minutely conniventlу 2–3-dentate; the discal hermaphrodite; limb of regular corolla campanulate, 5-dentate. Anthers short, emarginate at base. Style branches linear, dilated above and subtruncately penicillate at apex. Fruit oblong-cuneate, attenuate at base, 4–5-angled; pappus pales 8–12, oblong obtuse scarious.—A dwarf much-branched annual; leaves alternate linear, entire or few-lobed; capitules[3] numerous in a corymbiform cyme; bracts of campanulate involucre membranous few (4–6), obtuse at apex.[4] (*Chili.*[5])

347. **Thymopsis** Benth.[6]—Flowers fertile, 2-morphous; the radial few female; corolla thin shorter than style, minutely 2–3-dentate; the discal hermaphrodite; limb of regular tubular corolla campanulate, 4-fid. Anthers obtuse at base. Style branches of hermaphrodite flowers shortly and acutely appendiculate. Fruit oblong subterete, attenuate at base, striate; pappus pales free at base or connate in a cupule, obtuse ciliolate.—A spreading hispid herb; leaves opposite, oftener entire; capitules terminal or subsessile in upper axils; involucral bracts few, 2-seriate; the inner membranous; the outer herbaceous hispidulous; receptacle flat and bare. (*Cuba.*[7])

348? **Microspermum** Lag.[8]—"Flowers all fertile; the radial larger; corolla of all 5-merous; tube terete; radial limb much enlarged; outer lobes 3, very large; the inner 2, very small; discal limb campanulate regular. Anthers short, truncate at entire base. Style branches rather acutely subulate-appendiculate. Fruit oblong 4-angled; pappus 0 (or consisting of 1, 2 aristæ?). —A drooping herb, radicant at base, sparsely pilose; leaves opposite, petiolate dentate; capitules solitary terminal stipitate; bracts of hemispherical involucre herbaceous narrow, 1-2-seriate; receptacle rather convex bare." (*Mexico.*[9])

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[1] *Hook. Journ. Bot.* iii. 321.—B. H. *Gen.* ii. 406, n. 480.—*Aromia* Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 395.—*Infantea* Remy, *C. Gay Fl. chil.* iv. 257, t. 48.

[2] Yellow (?).

[3] Small.

[4] A genus connecting the *Heleniea* with the *Anthemideæ-Cotuleæ*, sometimes referred to *Schkuhria* (Sch. bip.), sometimes to *Bahia* (A. Gray).

[5] Spec. 1. *A. pusillus* Hook. and Arn.—Walp. *Rep.* ii. 626.—*Aromia tenuifolia* Nutt.—Torr. et Gr. *Fl. N.-Amer.* ii. 414.—Walp. *Rep.* vi. 210.—*Infantea chilensis* Remy.

[6] *Gen.* ii. 407, n. 481.

[7] Spec. 1. *T. Wrightii* Benth.—*Tetranthus thymoides* Griseb. *Cat. pl. cub.* 287.

[8] *Elench. H. matrit.* 25.—DC. *Prodr.* vii. 259.—Endl. *Gen.* 502.—*Miradoria* Sch. bip. herb. *Liebm.* (ex B. H.).

[9] Spec. 1, 2. Benth. *Pl. Hartweg.* 64.

349. **Tagetes** T.[1]—Flowers[2] fertile (or sometimes partly sterile), 2-morphous (or by defect of the radial 1-morphous); the radial female, 1-seriate; limb of ligulate corolla open, entire or 2–3-dentate or lobed, short or large, sometimes unequally campanulate; the discal hermaphrodite; limb of tubular corolla more or less expanded, 5-fid. Anthers obtuse at entire or subentire base. Style branches of hermaphrodite flowers thin or elongate, obtuse at apex, truncate or penicillate, sometimes shortly or very shortly appendiculate. Fruit linear or obconical, angular, compressed or striate, sometimes more or less attenuated at base and enlarged by a more or less developed callus; pappus pales few (5–6) or ∞ (7–20), free or connate, acute; aristate or obtuse, often ciliately serrulate, sometimes unequal, rarely reduced to a short ring, or 0.—Herbs or undershrubs, glabrous or variously clothed, often glandular, oily, scattered[3]; leaves opposite or rarely alternate, rarely entire or setaceous, oftener serrulate, dentate or pinnately dissected; capitules[4] solitary stipitate, rarely sessile, sometimes in dense corymbiform cymes; peduncle often dilated to apex and there hollow; involucre campanulate, ovoid or oftener cylindrical; bracts (often oily glandular) 1-seriate, deeply connate; sometimes in addition ∞ or few or 1 small outer[5]; receptacle flat or

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[1] *Inst.* 488, t. 278.—L. *Gen.* n. 964.—J. *Gen.* 182.—Poir. *Dict.* Suppl. v. 279.—Gærtn. *Fruct.* ii. 434, t. 172.—Less. *Syn.* 236.—DC. *Prodr.* v. 643; vii. 292.—Spach, *Suit. à Buffon*, x. 117.—Endl. *Gen.* n. 2580.—B. H. *Gen.* ii. 411, n. 496.—*Diglossus* Cass. *Bull. Soc. philom.* (1817); *Dict.* xiii. 241.—*Enalcida* Cass. *Dict.* xiv. 443.—*Solenotheca* Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 375.

[2] Yellow, golden or fuscate.

[3] Whence a strong odour.

[4] Large, moderate or small.

[5] Sections of the genus are:

Adenopappus Benth. *Pl. Hartweg.* 41; *Gen.* ii. 411, n. 495: pappus short annular or 0; involucral bracts deeply connate; leaves opposite. (*Mexico.*)

Dyssodia Cav. *Ann. cienc. nat.* vi. 334.—*Dysodia* DC. *Prodr.* v. 639 (not Lour., nor W.).—Endl. *Gen.* n. 2577.—B. H. *Gen.* ii. 409, n. 490.—*Bœbera* W. *Spec.* iii. 2125.—*Rosilla* Less. *Syn.* 245.—B. H. *Gen.* ii. 397, 1235, n. 452.—*Clomenocoma* Cass. *Dict.* ix. 416.—DC. *Prodr.* v. 641.—? *Comaclinium* Scheidw. *Fl. serr.* t. 756: flowers 1–2-morphous; involucral bracts connate at base or nearly free; in addition some or ∞ smaller exterior; fruit 3–5-angled; pappus pales to 10, setaceous-partite; leaves (very oily glandular) opposite or alternate, pinnately dissected; fruit pilose. (*Centr. Amer., Mexico.*)

? *Nicolettia* A. Gray, *Pl. Wright.* i. 119, t. 8.—B. H. *Gen.* ii. 409, n. 489: pappus duplex; outer consisting of ∞ thin hairs; inner of 5, 6 transparent pales; other characters of *Dyssodia.* (*Mexico.*)

Adenophyllum Pers. *Syn.* ii. 458.—DC. *Prodr.* v. 638.—Endl. *Gen.* n. 2575.—B. H. *Gen.* ii. 408, n. 488.—*Lebetina* Cass. *Dict.* xxv. 394.—DC. *Prodr.* v. 639.—Endl. *Gen.* n. 2576.—*Willdenowa* Cav. *Icon.* i. 61, t. 80 (not Thunb.).—*Schlechtendahlia* W. *Spec.* iii. 2125 (not Less.).—*Bœbera* Less. *Syn.* 237 (not W.): involucral bracts connate at base or free; fruit glabrous or pilose; pappus duplex; both or the inner only aristose; aristæ divided into hairs; outer sometimes shortly paleaceous; stem annual with resinous or oily glands; leaves opposite or alternate pinnatisect. (*Mexico.*) Sect. closely connecting *Eutagetes* with rather convex, bare or slightly fringed and alveolate. (*Warm and extratrop. N. and S. America*.[1])

350. **Chrysactinia** A. Gray.[2]—Flowers[3] fertile, 2-morphous (nearly of *Tagetes*); the radial female, 1-seriate; limb of ligulate corolla entire or 2-dentate; the discal hermaphrodite; corolla tubular. Anthers obtuse at base. Style branches of hermaphrodite flowers linear rather compressed, very shortly appendiculate; of female longer or more slender revolute. Fruit linear, ∞-striate; pappus hairs ∞, thin scabrous.—A small shrub; leaves (ericoid) alternate crowded linear entire; capitules[4] terminal stipitate; bracts of subcampanulate involucre subequal linear, 1-seriate; in addition sometimes 1–3 outer shorter; receptacle bare. (*N. Mexico*.[5])

351? **Syncephalantha** Bartl.[6] — "Flowers[7] 2-morphous; capitules six umbellately capitate and collected in a glomerule; the central discoidal; the outer radiating, 1–2-ligulate; single involucre 3-leaved, 1-seriate; receptacle hirsutely fringed. Fruit erostrate, 4-angularly compressed; pappus pales 15–20, divided into unequal dentate hairs.—An annual herb;[8] leaves alternate pinnatisect; segments dentate; capitular glomerules penduncculate at ends of branches." (*Mexico, Centr. America*.[9])

352? **Schizotrichia** Benth.[10] — "Flowers fertile, 2-morphous; the radial female, 1-seriate; the discal hermaphrodite;

Hymenatherum Cass. *Bull. Soc. philom.* (1817), 76; (1818), 21; *Dict.* xxii. 313.—DC. *Prodr.* v. 642; vii. 292.—Endl. *Gen.* n. 2579.—B. H. *Gen.* ii. 410, n. 493.—*Gnaphalopsis* DC. *Prodr.* vii. 258.—*Aciphyllæa* A. Gray, *Pl. Fendler.* 91: bracts of obconical involucre deeply connate; pappus pales 10–25; stem herbaceous or subshrubby; leaves opposite or alternate, entire or pinnatisect; capitules stipitate or sessile. (*South-west N. Amer.*)

Thymophylla Lag. *Elench. H. matrit.* 25.—DC. *Prodr.* v. 647.—Endl. *Gen.* n. 2581.—*Thymophyllum* B. H. *Gen.* ii. 410, n. 494.—*Lowellia* A. Gray, *Pl. Fendler.* 89: flowers 1–2-morphous (radial sometimes 0); involucral bracts deeply connate (glandular), in addition some small exterior; pappus pales 5–12, short, free or connate at base; stem subshrubby; leaves opposite short subsetaceous. (*Mexico.*)

[1] Spec. about 55. Cav. *Ic.* t. 169; 212 (*Aster*), 252, 264.—Jacq. f. *Eclog.* t. 80.—Vent. *Jard. Cels*, t. 36.—H. B. *Pl. æquin.* ii. t. 73.—Field, *Sert. pl.* t. 37 (*Comaclinium*).—A. Gray, *Proc. Amer. Acad.* v. 163 (*Dysodia*); *Pl. Wright.* i. 115 (*Hymenatherum*), 119, t. 7 (*Thymophyllum*).—Sweet, *Brit. fl. Gard.* t. 141, 151; ser. 2, t. 35.—Remy, *C. Gay Fl. chil.* iv. 270 (*Hymenatherum*), 270.—*Bot. Mag.* t. 3830.—Walp. *Rep.* ii. 624; 987 (*Dysodia*); vi. 171 (*Dysodia*), 173; *Ann.* i. 415; 416 (*Nicolletia*); ii. 871 (*Aciphyllæa*), 872 (*Hymenatherum, Lowellia*), 873; v. 231 (*Adenophyllum*), 232 (*Dysodia, Hymenatherum*), 233.

[2] *Pl. Fendler.* 93, not.—B. H. *Gen.* ii. 412, n. 497.

[3] Yellow.

[4] Small.

[5] Spec. 1. *C. mexicana* A. Gray.—Walp. *Ann.* ii. 873.

[6] *Ind. sem. H. gœtt.* (1836), 6; *Linnæa*, xii. *Litt. Ber.* 80.—DC. *Prodr.* vii. 262.—Endl. *Gen.* n. 3032^{12}.—*Syncephalanthe* Reichb. *Nom.* 83.—*Syncephalanthus* B. H. *Gen.* ii. 409, n. 491.

[7] "Golden."

[8] "Habit of *Dysodia* (unknown to us); pappus, corolla and style of *Hymenatherum*" (char. ex DC.).

[9] Spec. 1. *S. decipiens* Bartl.

[10] *Gen.* ii. 410, n. 492 (whence char. derived).

corolla of all tubular thin; limb of female little expanded, 3–4-dentate; of hermaphrodite broader and shortly 5-fid. Anthers entire at base. Style branches of hermaphrodite flowers rather long, capitately truncate at apex penicillate. Fruit linear obconical subterete, ∞-striate; pappus pales to 20, above shortly entire base divided into thin rather long hairs.—A villosulous shrub (?); leaves[1] opposite, oval crenulate, petiolate; capitules (rather small) in a terminal foliate panicle; bracts of campanulate involucre 6–8 membranous; in addition sometimes 1, 2, outer smaller; receptacle small flat, very shortly fringed." (*Peru.*[2])

353. **Pectis** L.[3] — Flowers[4] fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla small, open or erect, entire or 2–3-dentate; the discal hermaphrodite; limb of tubular corolla more or less expanded, equally or unequally 4–5-fid or dentate. Anthers entire or subentire at obtuse base. Style of hermaphrodite flowers thin elongate hirtellate; branches short obtuse. Fruit linear, subterete or slightly angular, ∞-striate; pappus hairs few or ∞ thin, rigid, subulate or dilated at base; some or occasionally all scalelike.—Annual or perennial herbs, oily-glandular; leaves opposite, narrow or linear, often sparsely setose or ciliate to base; capitules[5] slenderly stipitate, solitary or corymbiform-cymose; bracts of subcampanulate or often cylindrical involucre free, 1-seriate; receptacle small or minute and bare.[6] (*Warm N. and S. America.*[7])

354. **Porophyllum** Vaill.[8]— Flowers[9] hermaphrodite fertile, 1-morphous; limb of regular thin-tubular corolla narrow-campanulate, 5-fid or dentate. Anthers entire at base. Style branches with long generally subulate hirsute appendages. Fruit

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[1] With oily glandules (more frequent in bracts of involucre).

[2] Spec. 1. *S. eupatorioides* Benth.

[3] *Gen.* n. 963.—J. *Gen.* 182.—Lamk, *Ill. t.* 684.—DC. *Prodr.* v. 98–103.—Endl. *Gen.* n. 2250.—B. H. *Gen.* ii. 412, n. 498.—*Pectidium* Less. *Linnæa*, vi. 706.—Endl. *Gen.* n. 2249.—*Pectidopsis* DC. *Prodr.* v. 98.—*Lorentea* Lag. *Elench. H. matrit.* 28.—DC. *Prodr.* v. 101.—Endl. *Gen.* n. 2251.—*Chthonia* Cass. *Dict.* ix. 173.—? *Cryptopetalon* Cass. *Dict.* xii. 123.—*Cheilodiscus* Tri. *Ann. sc. nat.* sér. 4, ix. 36.

[4] Yellow (or whitish ?).

[5] Moderate or small.

[6] A genus presenting a depauperated type of *Tagetes*, and connecting it with *Porophyllum*.

[7] Spec. about 30. Cav. *Icon.* t. 324.—H. B. K. *Nov. gen. et spec.* iv. t. 192, 193.—A. Gray, *Pl. Wright.* i. 83.—*Fl. jard.* iv. 33, icon.—Walp. *Rep.* ii. 544; vi. 104; *Ann.* i. 392 (*Lorentea*); ii. 812; v. 147.

[8] *Act. Acad. par.* (1719), 407.—L. *H. Cliff.* 494.—Adans. *Fam. des pl.* ii. 122.—Cass. *Dict.* xliii. 56.—DC. *Prodr.* v. 647 (sect. 1).—Endl. *Gen.* n. 2582.—B. H. *Gen.* ii. 408, n. 486.—*Kleinia* Jacq. *St. amer.* 215, t. 127 (not L.).—Less. *Syn.* 196.

[9] Yellow or purplish.

linear, often contracted at apex, pilosulous or rarely glabrous, ∞-striate; pappus hairs ∞, thin, scabrous or barbellate, 1–2-seriate.—Herbs sometimes shrubby at base, glabrous, often glaucescent, with various oily glands; leaves alternate or sometimes opposite at base, entire, sinuate or widely serrate; capitules[1] stipitate, solitary or loosely cymose; bracts of cylindrical or narrow campanulate involucre few (4–8) linear or subulate, free or connate at base; receptacle narrow bare.[2] (*Warm N. and S. America.*[3])

355. **Jaumea** Pers.[4]—Flowers[5] fertile, 2-morphous or (by defect of the radial) 1-morphous; the radial female, 1-seriate; limb of ligulate corolla open 3-dentate or subentire; the discal hermaphrodite; limb of tubular corolla scarcely expanded cylindrical, 5-dentate. Anthers obtuse at base, truncate or emarginate. Style of hermaphrodite flowers elongate; branches oftener rather short and compressed, obtuse or truncate at apex, papillose. Fruit oblong, angular or rather compressed, obtusely costate; pappus hairs ∞, sometimes few compressed-subpaleaceous or subaristate, ciliately barbellate, or 0.—Herbs or undershrubs, glabrous or ciliate; leaves opposite, lanceolate or linear rather fleshy entire; capitules terminal or axillar to upper leaves stipitate; peduncle sometimes thickened to apex; bracts of subcampanulate involucre few-seriate broad membranous obtuse striate, imbricate; the outer often gradually shorter; receptacle flat or slightly convex bare.[6] (*Extratrop. N. and S. America, trop. East. Africa.*[7])

356? **Olivæa** Sch. bip.[8]—"Flowers[9] fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla open, scarcely dentate at apex; the discal hermaphrodite; corolla tube glandularly hispid; limb cylindrical-campanulate, 5-fid. Anthers very shortly and obtusely auriculate at base. Style branches of hermaphrodite flowers flattened, with lanceolate hirsute appendages; of female obtuse more glabrous. Fruit laterally compressed oval, 2- (or 3 ?) alate; pappus hairs long to 10, shortly plumose, caducous.—A marshy (?) herb (?) glabrous or glandular pubescent above; leaves alternate, dilated amplexicaul at base and there few-dentate, otherwise entire or 3-cuspidate; capitules[1] terminal stipitate; bracts of broadly hemispherical involucre herbaceous, unequal, 3–4-seriate; receptacle flat and bare." (*Mexico.*[2])

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[1] Rather large (recalling those of *Tragopogon*) or rather small.

[2] Sect. of the genus is *Lescaillea* Griseb. *Cat. pl. cub.* 156.—B. H. *Gen.* ii. 408, n. 487: style branches rather acute or rather obtuse at apex; fruit glabrous; pappus setose; stem subshrubby nearly leafless and opposite squamiferous. (*Cuba.*)

[3] Spec. 15, 16. Lamk, *Ill.* t. 673, fig. 4 (*Cacalia*).—Cav. *Icon.* t. 222, 257 (*Cacalia*).—H. B. K. *Nov. gen. et spec.* t. 356 (*Kleinia*).—Remy, *C. Gay Fl. chil.* iv. 276.—Walp. *Rep.* ii. 624; vi. 174, 722; *Ann.* ii. 874; v. 234.

[4] *Syn.* ii. 397.—DC. *Prodr.* v. 663.—Endl. *Gen.* n. 2600.—B. H. *Gen.* ii. 397, 1235, n. 449.—*Kleinia* J. *Ann. Mus.* ii. 424, t. 61 (not Haw., nor Jacq.).—*Espejoa* DC. *Prodr.* v. 660.—Deless. *Ic. sel.* iv. t. 41.—Endl. *Gen.* n. 2595.—*Chæthymenia* Hook. and Arn. *Beech. Voy. Bot.* 298, t. 62.—*Hypericophyllum* Steetz, *Pet. Moss. Bot.* 498, t. 50.

[5] Yellow.

[6] Sect. of the genus is *Coinogyne* Less. *Linnæa*, vi. 520, t. 6; *Syn.* 261.—DC. *Prodr.* vi. 41.—Endl. *Gen.* n. 2658; pappus 0.

[7] Spec. 5, 6. Oliv. and Hiern, *Fl. trop. Afr.* iii. 395.—Walp. *Rep.* vi. 174 (*Chæthymenia*).

[8] Ex Benth. *Hook. Icon.* t. 1103; *Gen.* ii. 397, n. 451 (whence char. derived).

[9] "Yellow."

357. **Cacosmia** H. B. K.[3]—Flowers[4] fertile, 1–2-morphous; the radial female few or 0; limb of ligulate corolla entire or minutely few-dentate; the discal hermaphrodite; limb of tubular corolla little expanded, 5-fid. Anthers, obtuse or minutely auriculate at base. Style branches of hermaphrodite flowers thin, rather obtuse at apex, hirtellate. Fruit oblong, subterete or obtusely angled; pappus 0 or very short annular denticulate.—Shrubs variously lanate or tomentose; leaves[5] opposite; capitules[6] in terminal corymbiform or contracted cymes; receptacle small narrow cylindrical, flat above; involucral bracts ovoid budlike, 4–5-fariam imbricate, dry or coriaceous; the lower gradually shorter. (*S. America.*[1])

358. **Geissopappus** Benth.[8]—Flowers[9] fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla open, 3-dentate; the discal hermaphrodite; corolla tube short; limb expanded cylindrical, 5-fid. Anthers subentire at base. Style branches of hermaphrodite flowers ovoid-dilated at apex; of female more slender revolute. Fruit oblong, scabrous, 5-costate; pappus pales ∞, short or oblong, rather acute or truncate, entire or denticulate.—Dichotomous branched herbs, hirsute or scabrous; leaves opposite, often dentate; capitules terminal stipitate, loosely cymose or solitary; bracts of subcampanulate involucre pluri-

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[1] Rather large.

[2] Spec. 1, apparently connecting the *Helenieæ* with the *Anthemideæ*. *O. tricuspis* Sch. Bip.

[3] *Nov. gen. et spec.* iv. 289, t. 404.—DC. *Prodr.* vii. 265.—Endl. *Gen.* n. 2247.—B. H. *Gen.* ii. 306, n. 447.—*Xantholepis* W. herb. (ex Less.).—*Clairvillea* DC. *Prodr.* v. 636; vii. 97.

[4] Yellow, odorous.

[5] Often, from nerves 3–5 and rugose upper surface, nearly of the *Melastomaceæ*.

[6] Small, numerous.

[7] Spec. 2, 3. Less. *Linnæa* (1829), 338, fig. 31, 53–55.

[8] *Hook. Journ. Bot.* ii. 44; *Gen.* ii. 396, n. 448.—*Schomburgkia* DC. *Prodr.* vii. 293; *Mém. Comp.* 23, t. 9 (not Lindl.).—*Trinchinettia* Endl. *Gen.* n. 2605[1].

[9] Yellow or golden, sometimes by defect of the radial all regular.

seriate, imbricate, rigid striate; the outer shorter; receptacle more or less convex bare. (*Guiana, Brazil.*[1])

359. **Venegazia** DC.[2]—Flowers[3] fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla open elongate entire; the discal hermaphrodite; tube of regular corolla papillose; limb cylindrical expanded, 5-fid. Anthers entire or emarginate at base. Style branches of hermaphrodite flowers rather thick truncately obtuse; of female more slender revolute. Fruit narrow angular striate, without pappus.—An erect herb,[4] glabrous or pubescent; leaves alternate, oval dentate, petiolate; capitules[5] terminal, solitary or cymose few; bracts of broad involucre few-seriate obtuse imbricate; the outer herbaceous; the inner subscarious; receptacle rather flat foveolate.[6] (*California.*[7])

360. **Senecio** T.[8]—Flowers[9] 2-morphous (or by defect of the radial 1-morphous); the radial female, fertile or sterile, 1-seriate; limb of ligulate corolla elongate open, sometimes short or very short revolute or various in form;[10] the discal hermaphrodite, fertile or sterile; limb of regular tubular corolla either narrow not or scarcely expanded, or suddenly expanded and campanulate, 5-fid or dentate. Anthers obtuse at base, entire, minutely auriculate or shortly or very shortly setaceous-mucronate. Style branches

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[1] Spec. 2.

[2] *Prodr.* vi. 43.—Endl. *Gen.* n. 2660.—B. H. *Gen.* ii. 397, n. 450.

[3] Yellow.

[4] Somewhat resembling a small *Helianthus.*

[5] Rather large.

[6] A genus hence connecting the *Helianthеæ* and thence the *Helenieæ* with the *Anthemideæ.*

[7] Spec. 1. *V. carpesioides* DC.

[8] *Inst.* 456, t. 260.—L. *Gen.* n. 953.—Adans. *Fam. des pl.* ii. 122.—J. *Gen.* 181.—Gærtn. *Fruct.* ii. t. 166.—Cass. *Dict.* xlviii. 454.—DC. *Prodr.* vi. 341; vii. 300.—Endl. *Gen.* n. 2811. —B. H. *Gen.* ii. 446, 1236, n. 585.—*Cineraria* L. *Gen.* n. 957 (not *Auctt.*).—*Jacobæa* Thunb. *Fl. cap. Prodr. Præf.*; *Fl. cap.* 675.—*Anecio* Neck. *Elem.* i. 28.—? *Farobæa* Schr. ex Coll. *H. ripul.* App. iv. 19, t. 9, *a.*—*Herbichia* Zawadsk. *Enum. pl. galic.* 198.—*Obæjaca* Cass. *Dict.* xxxv. 270.—? *Aspelina* Cass. *Dict.* xli. 166.—*Sclerobasis* Cass. *Dict.* xlviii. 145.—*Eudorus* Cass. *loc. cit.* 458.—*Carderina* Cass. *Dict.* xxxv. 272.—*Synarthron* Cass. *Dict.* li. 457.—*Dorobæa* Cass. *Dict.* xlviii. 453.—*Pithosillum* Cass. *Dict.* xli. 164.—*Roldana* Ll. et Lex. *N. veg. descr.* ii. 10 (ex DC.).—*Brachyrhynchos* Less. *Syn.* 392.—DC. *Prodr.* vi. 487.—Endl. *Gen.* n. 2812.—*Tephroseris* Schur, *Enum. pl. trans.* 343.—*Mesogramma* DC. *Prodr.* vi. 304.—*Madaractis* DC. *loc. cit.* 322.—*Lachanodes* DC. *Guillem. Arch. bot.* ii. 332; *Prodr.* vi. 442.—*Aoleia* DC. *Prodr.* vi. 340.—*Hubertia* Bory, *Voy. Afr.* i. 334, t. 14.—*Synarthron* Cass. *Dict.* li. 457.—*Metazanthus* Meyen, *Reis.* i. 356.—*Danaa* Coll. *Mem. Accad. torin.* xxxviii. 27, t. 28.—*Microchæte* Benth. *Pl. Hartweg.* 209.—*Cladopogon* Sch. bip. *Ind. sem. H. hamb.* (1852); *Flora* (1853), 61.—*Brachypappus* Sch. bip. *Flora* (1855), 119.—*Adenotrichia* Lindl. *Bot. Reg.* t. 1190.—*Haplosticha* Phil. *Linnæa*, xxx. 193. —*Delairia* Lme, *Ann. sc. nat.* sér. 3, i. 379.—*Traversia* Hook. f. *Handb. N.-Zeal. Fl.* 163; *Icon.* t. 1002.—*Centropappus* Hook. f. *Hook. Lond. Journ.* vi. 123; *Fl. tasman.* t. 65.—*Pladaroxylon* Endl. *Gen.* 461.—Hook. f. *Icon.* t. 1055.—*Madacarpus* Wight, *Icon.* t. 1152.—*Pericallis* Webb, *Phyt. canar.* t. 103–106.—*Bethencourtia* Chois. *Buch. Canar.* (ex DC.).—*Cissampelopsis* Miq. *Fl. ind.-bat.* ii. 102.

[9] The radial yellow, white, pink, purplish or violet; discal whitish, yellow, purplish, violet, fuscate or blackish.

[10] Corolla here and there filiform or abortive,

of hermaphrodite flowers terete or rather compressed, more or less dilated at apex, open or finally recurved, truncate or obtuse penicillate or variously appendiculate; appendage short broad, oval or narrow and longer, or very long subulate, hirtellate or papillose; of female oftener thinner, recurved or revolute. Fruit terete, subterete or more or less compressed or broad, equal at apex or longer or shorter constricted, sometimes papillose-glandular or transparent-papillose; pappus hairs[1] ∞, thin, entire, scabrous, sometimes shortly barbellate, more rarely short, evanescent or sometimes 0.—Herbs, sometimes branched or climbing, undershrubs or shrubs rarely arborescent, glabrous, variously pilose or lanate, intricately tomentose or villose, rarely stellately pubescent;[2] leaves alternate or basal rosulate, very rarely opposite, entire, dentate, lobed or pinnately dissected, sometimes succulent; capitules[3] solitary or variously racemiform spiciform or corymbiform cymose, sometimes subsessile; involucre broad or narrow, cylindrical, campanulate or subhemispherical; bracts narrow equal, imbricate or conniventty connate or equitant, either subequal, 1–2-seriate, or the outer few smaller or minute, herbaceous or coriaceous or membranous, erect or finally patulous or reflexed, flat at back, carinate or 3-nerved;[4] receptacle flat or rather con-

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[1] Oftener white.

[2] Hence often hoary.

[3] Large, moderate or small.

[4] Sections of the genus are:

Senecillis Gærtn. *Fruct.* ii. 453, t. 173.—DC. *Prodr.* vi. 318.—Endl. *Gen.* n. 2798.—*Ligularia* Cass. *Bull. Soc. philom.* (1816), 198; *Dict.* xxvi. 401.—DC. *Prodr.* vi. 313; vii. 300.—Endl. *Gen.* n. 2799.—*Farfugium* Lindl. *Gardn. Chron.* (1857), 4.—*Erythrochæte* Sieb. et Zucc. *Fl. jap. fam.* ii. 64, *Abh. Baier. Akad.* (1847): capitules solitary or oftener in thyrsoid racemes; corolla (large) sometimes 2-labiate (whence forming a transition to the *Mutisieæ*, Benth.); style of hermaphrodite flowers pubescent below middle and often rotundate at apex. (*Asia, West. Europe.*)

Kleinia L. *H. Cliff.* 395 (part.).—Haw. *Syn. pl. succ.* 312.—DC. *Prodr.* vi. 336.—Endl. *Gen.* n. 2809.—*Cacalianthemum* Dill. *H. eltham.* i. 54: stem or also leaves fleshy; flowers all regular; style truncate penicillate or shortly and broadly appendiculate. (*S. Africa.*)

Cacalia L. *Gen.* n. 933.—DC. *Prodr.* vi. 327.—Endl. *Gen.* n. 2806.—Maxim. *Bull. Acad. Pét.* xix. 483; *Mél. biol.* ix. 292.—*Ætheolæna* Cass. *Dict.* xlviii. 450.—*Pericalia* Cass. *loc. cit.* 459.—*Psacalium* Cass. *loc. cit.* 461.—*Pentanthus* Hook. and Arn. *Comp. Bot. Mag.* i. 32.—DC. *Prodr.* vii. 54.—*Odontotrichum* Zucc. *Abh. Baier. Akad.* (1832), 311.—*Sciadoseris* Kze, *Bot. Zeit.* (1851), 349.—*Rugelia* Shuttl. *Chapm. Fl. S. Unit. St.* 246.—*Syneilesis* Maxim. *Prim. Fl. amur.* 165; *Bull. Acad. Pét.* ix. *loc. cit.*: capitules few-∞-flowered; corolla oftener pale or white; style branches rounded or with short conical appendage, often thinly papillose. (*Warm and temp. reg. of both worlds.*)

Notonia DC. *Guillem. Arch. bot.* ii. 518; *Prodr.* vi. 441 (not W. et Arn.).—Endl. *Gen.* n. 2817.—B. H. *Gen.* ii. 446, n. 584: stem shrubby fleshy; leaves entire fleshy; involucre cylindrical; flowers 1-morphous; corolla yellow; style branches with ovoid papillose appendage. (*E. India.*)

Bedfordia DC. *Guillem. Arch. bot.* ii. 332; *Prodr.* vi. 441.—Endl. *Gen.* n. 2816.—B. H. *Gen.* ii. 450, n. 587: stem shrubby; capitules axillar solitary or closely cymose; flowers 1-morphous fertile; tomentum stellar. (*Australia, Tasmania.*)

Brachyglottis Forst. *Char. gen.* 91, t. 46.—DC. *Prodr.* v. 210.—Endl. *Gen.* n. 2291.—B. H. *Gen.* ii. 444, n. 579: stem arborescent; leaves alternate, broadly dentate, hoary tomentose beneath; flowers 2-morphous; discal vex, bare, foveolate or fringed. (*All warm, temp. and cold*

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corollas lobulate at base small oftener enlarged; fruit with transparent papillæ. (*N. Zealand.*)

Gynoxys Cass. *Dict.* xlviii. 455.—DC. *Prodr.* vi. 325 (part.).—Endl. *Gen.* n. 2805.—B. H. *Gen.* ii. 450, n. 586: stem arborescent or shrubby; leaves opposite, petiolate, glabrous or tomentose; bracts of involucre oblong coriaceous, sub-1-seriate; flowers 1–2-morphous; style branches of female flowers with conical or subulate appendages or penicillate. (*Trop. Amer.*).

Gynura Cass. *Dict.* xxxiv. 391.—DC. *Prodr.* vi. 298.—Endl. *Gen.* n. 2792.—B. H. *Gen.* ii. 445, n. 581.—*Crassocephalum* Mœnch, *Meth.* 516 (prior.).—*Cremocephalum* Cass. *Dict.* xxxiv. 390.—DC. *Prodr.* vi. 297.—Endl. *Gen.* n. 2791: stem subshrubby or oftener herbaceous; leaves alternate, entire or pinnately lobed or dissected; flowers 1-morphous; style branches with long hirtellate appendages; fruit glabrous. (*Warm Asia, Africa and Australia.*)

Erechtites Rafin. *Fl. ludov.* 65.—DC. *Prodr.* vi. 294.—Endl. *Gen.* n. 2790.—B. H. *Gen.* ii. 443, n. 577.—*Neoceis* Cass. *Bull. Soc. philom.* (1820), 90; *Dict.* xxxiv. 386: stem herbaceous; leaves alternate, pubescent or lanate, entire, lobed or dissected; capitules (oftener narrow) corymbiform-cymose; outer flowers female, 2–∞-seriate; corolla very slender sub-regular or 3–5-dentate. (*Warm Amer., Australia, New Zealand.*)

Cineraria L. *Gen.* n. 957 (part.).—Less. *Syn.* 390.—DC. *Prodr.* vi. 305 (part.).—Endl. *Gen.* n. 2797.—B. H. *Gen.* ii. 445, n. 582.—*Xenocarpus* Cass. *Dict.* lix. 108: stem subshrubby or herbaceous; leaves alternate or basal, often hoary tomentose, generally broad, incised or pinnatisect, sometimes entire; capitules corymbiform-cymose; flowers 1–2-morphous; involucre often without small exterior bracts (a spurious calycule); fruit all or radial only dorsally compressed and generally broad. (*Trop. and S. Africa.*)

Emilia Cass. *Dict.* xiv. 405.—DC. *Prodr.* vi. 302.—Endl. *Gen.* n. 2793.—B. H. *Gen.* ii. 445, n. 583: stem herbaceous, annual or perennial; leaves basal or alternate, entire, dentate or lyrately pinnatifid, often auriculate at base, often glaucescent; capitules solitary or loosely cymose, stipitate; small outer involucral bracts 0; flowers 1-morphous; corolla golden or coccineal; style branches with short or rather long appendages; fruit glabrous or pilosulose-scabrous. (*Asia and trop. Africa.*)

Stilpnogyne DC. *Prodr.* vi. 293.—Deless. *Ic. sel.* iv. t. 54.—Endl. *Gen.* n. 2789.—B. H. *Gen.* ii. 444, n. 578: stem annual insignificant; leaves alternate, mostly basal cordate, incised dentate, long-petiolate; capitules (small) solitary or sparsely cymose stipitate; flowers 2-morphous; fruit papillosely glandular; outer without pappus. (*S. Africa.*)

[1] Spec. about 950. Vahl, *Symb.* t. 71 (*Cineraria*).—Cav. *Ic.* t. 244 (*Cineraria*).—Lhér. *Sert. angl.* t. 30–33, 34 (*Cineraria*); *St.* t. 83 (*Cacalia*).—Jacq. *Fragm.* t. 1; *H. schœnbr.* t. 150, 304; *Ic. rar.* t. 168 (*Cacalia*), 174; 580, 581 (*Cacalia*), 587; *H. vindob.* i. t. 3; iii. t. 98; *Fl. austr.* t. 79, 176–181 (*Cineraria*), 184, 186, 278.—Labill. *Pl. N.-Holl.* t. 178, 179 (*Cacalia*), 194.—Vent. *Jard. Malmais.* t. 99–101 (*Cineraria*).—H. B. K. *Nov. gen. et spec.* iv. t. 357–361 (*Cacalia*), 364–367.—Deless. *Ic. sel.* iv. t. 54 (*Stilpnogyne*), 55, 56 (*Gynura*), 61 (*Notonia*).—Sm. *Exot. Bot.* t. 65 (*Cineraria*); *Icon. ined.* t. 71 (*Stæhelina*).—Hook. *Icon.* t. 493, 1067, 1114.—Reichb. *Iconogr.* t. 101–110, 124–128, 131–133 (*Cineraria*), 134–139, 293–295, 357, 358, 461, 485; *Ic. exot.* t. 24 (*Cineraria*), 122, 123, 236; *Ic. Fl. germ.* t. 959–982, 984.—Field, *Sert. pl.* t. 15, 16, 59, 60.—Ad. Br. *Voy. Coq. Bot.* t. 59.—Hombr. et Jacquin. *D'Urv. Voy. pôle sud, Bot.* t. 10–13.—Dcne, *Jacquem. Voy. Bot.* t. 98 (*Senecillis*).—Hook. *Fl. bor.-amer.* t. 112–117.—Torr. *Fl. N.-York.* t. 59 (*Cacalia*).—Sweet, *Brit. fl. Gard.* t. 256 (*Cineraria*).—Andr. *Bot. Repos.* t. 24 (*Cineraria*), 291.—Reg. *Gartenfl.* t. 394.—Saund. *Ref. bot.* t. 7 (*Kleinia*), 250, 251.—Maund, *Bot.* t. 215.—Waldst. et Kit. *Pl. rar. hung.* t. 143.—Ledeb. *Ic. Fl. ross.* t. 94, 157, 357; 367 (*Cineraria*), 493.—Vis. *Fl. dalmat.* t. 7, 8.—Sibth. *Fl. græc.* t. 871; 872 (*Cineraria*), 868–870.—Ten. *Fl. nap.* t. 78; 193 (*Arnica*).—Boiss. *Voy. Esp.* t. 95–98 *a*; *Diagn. or.* ser. 2, iii. 32; *Fl. or.* iii. 382 (*Ligularia*), 383.—Lge, *Pl. nov. Hisp.* t. 21.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 110 (*Cineraria*), 111.—Link et Hoffmsg, *Fl. portug.* t. 99, 100.—Desf. *Fl. atl.* t. 233, 234.—Webb. *Phyt. canar.* t. 107, 108.—Wight, *Icon.* t. 484 (*Notonia*), 1121, 1122 (*Gynura*), 1123 (*Emilia*), 1130–1136.—A. Rich. *Fl. abyss.* t. 58; *Voy. Astrol. Bot.* t. 34, 37–39.—Kl. *Pr. Waldem. Reis. Bot.* t. 82.—Raoul, *Choix pl. N.-Zél.* t. 17, 18.—Seem. *Her. Bot.* t. 31.—Miq. *Fl. ind.-bat.* ii. 96 (*Erechtites*), 97 (*Gynura, Cremocephalium*), 101 (*Emilia*), 102 (*Cissampelopsis*), 103 (*Senecio*); *Ann. Mus. lugd.-bat.* ii. 181.—Hook. f. *Fl. antarct.* t. 108–110; *Fl. N.-Zel.* t. 38, 39, 41; *Handb. N.-Zeal. Fl.* 158; *Fl. tasm.* t. 64; *Fl. brit. Ind.* iii. 333 (*Gynura*), 335 (*Emilia*), 337 (*Notonia*), 338.—F. Muell. *Pl. Victoria*, t. 46; *Veg. Chat. isl.* t. 3, 4.—Hance, *Seem. Journ.* vi. 174.—Maxim.

361 ? **Mesoneuris** A. GRAY.[1]—"Flowers[2] hermaphrodite fertile, 1-morphous; corolla hypocrateriform, 5-merous, induplicately valvate. Anthers shortly dentate at base. Style branches rather thick, pierced with a strong middle nerve, subtruncate hirtellate at apex. Fruit cylindrical nerveless, crowned with a broad areole; pappus hairs rather rigid scabrous, 1-seriate, enlarged at base by a thick ring.—A herb; leaves alternate bipinnatifid; petiole at base surrounding stem spathaceously auriculate; capitules cymose; bracts of campanulate involucre 12–15, oblong lanceolate, 2-seriate, subherbaceous, 3–5-nerved, scarious at margin and thickened at base; in addition a few outer loose filiform; receptacle rather convex fringed." (*Mexico.*[3])

362 ? **Culcitium** H. B.[4]—Flowers[5] (nearly of *Senecio*[6]) hermaphrodite fertile, 1-morphous; limb of long tubular corolla scarcely expanded cylindrical, 5-fid or dentate. Anthers entire or shortly auriculate at base. Style branches penicillate at dilated truncate apex. Fruit linear subterete, ∞-striate or costate; pappus hairs ∞, scabrous or barbellate.—Perennial herbs, tomentose or densely lanate; leaves alternate or basal rosulate, entire or serrulate; capitules[7] solitary or cymose few terminal, often drooping; bracts of cupuliform, hemispherical or shortly campanulate involucre imbricate, ∞-seriate; the outer often gradu-

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Bull. Acad. Pét. (1871), *Mél. biolog.* viii.—BENTH. *Fl. hongkong.* 190; *Fl. austral.* iii. 657 (*Erechtites*), 661 (*Gynura, Senecio*), 678 (*Bedfordia*).—HARV. and SOND. *Fl. cap.* iii. 306 (*Stilpnogyne, Mesogramma*), 307 (*Cineraria*), 305 (*Cacalia, Kleinia*), 346.—TORR. *Whippl. Exp. Bot.* 55; *Emor. Exp. Bot.* 103.—PHIL. *Fl. atacam.* 32; *Linnæa*, xxviii. 738; xxix. 1; xxx. 194; xxxiii. 148.—WEDD. *Chlor. andin.* i. 74, t. 21 (*Gynoxys*); 89, t. 18–20.—A. GRAY, *Proc. Amer. Acad.* v. 141; vii. 362; *Man.* (ed. 1856), 229 (*Erechtites*); *Parry Rock. Mount. Pl.* 10.—CHAPM. *Fl. S. Unit. St.* 244 (*Erechtites, Cacalia*), 245.—GRISEB. *Fl. brit. W.-Ind.* 381 (*Erechtites, Emilia, Gynoxys*), 382; *Symb. Fl. argent.* 203.—KÆMPF. *Ic. sel. jap.* t. 27, 28 (*Tussilago*).—FR. et SAV. *Enum. pl. jap.* i. 246.—JAUB. et SP. *Ill. pl. or.* t. 398.—OLIV. and HIERN, *Fl. trop. Afr.* iii. 401 (*Gynura*), 404 (*Cineraria*), 405 (*Emilia*), 408.—BAK. *Fl. maur.* 176 (*Gynura*), 177 (*Emilia*), 177.—KLATT, *Ann. sc. nat.* sér. 5, xviii. 373 (*Cremocephalum*), 374 (*Emilia, Cacalia*), 375.—GREN. et GODR. *Fl. de Fr.* ii. 110; 125 (*Ligularia*).—*Bot. Reg.* t. 41, 101, 110 (*Cacalia*); 812 (*Cineraria*), 901; 923 (*Cacalia*), 1842, 1550; (1839), t. 7, 45.—*Bot. Mag.* t. 53, 406, 564 (*Cacalia*), 1536, 1786, 1869; 1990 (*Cineraria*), 2262, 2647; 3215 (*Cineraria*), 4511 (*Gynoxys*), 5123 (*Gynura*), 5302, 5417 (*Ligularia*), 5590 (*Kleinia*); t. 238, 3487, 3827, 4011, 4803, 5396, 5945 (*Cineraria*), 5959, 6063, 6099, 6101, 6149, 6216, 6363, 6488.—WALP. *Rep.* ii. 651 (*Cineraria, Senecillis, Ligularia*), 652 (*Cacalia*), 653; vi. 251 (*Cineraria, Senecillis*), 252 (*Ligularia*), 256 (*Metaxanthus, Gynoxys*), 257, 727; *Ann.* i. 424 (*Gynura*), 425 (*Madacarpus*), 426; 427 (*Madaractis*); ii. 906 (*Erechtites, Gynura*), 907 (*Cineraria*), 908 (*Gynoxys, Cacalia*), 909; 920 (*Notonia*); v. 333 (*Cacalia*), 334; 347 (*Brachypappus*).

[1] *Proc. Amer. Acad.* viii. (1873), 661.—B. H. *Gen.* ii. 1235, n. 580 *a*.

[2] "White."

[3] Spec. 1. *M. bipinnatifida*, A. GRAY.

[4] *Pl. æquin.* ii. 1, t. 66, 67.—LESS. *Syn.* 393.—DC. *Prodr.* vi. 324 (part.).—ENDL. *Gen.* n. 2804.—B. H. *Gen.* ii. 444, n. 580.—*Lasiocephalus* SCHLCHTL, *Ges. Nat. Fr. Berl. Mag.* viii. 308.—*Oresigonia* LESS.

[5] Yellow.

[6] Of which (?) a sect.

[7] Large or rather large.

ally smaller; receptacle flat or convex, bare, foveolate or fringed. (*Andine and Magellanic S. America.*[1])

363. **Haploesthes** A. Gray.[2]—Flowers[3] fertile, 2-morphous; the radial few female; limb of ligulate corolla rather broad open, entire or few-dentate; the discal hermaphrodite; limb of tubular corolla cylindrical, 5-dentate. Anthers subentire at obtuse base. Style branches of hermaphrodite flowers subterete or rather compressed, truncate at dilated apex; of female thinner recurved. Fruit linear, 10-costate; pappus hairs ∞, thin, scabrous or thinly barbellate.—An erect slender glabrous herb; leaves opposite linear; capitules[4] in loose corymbiform terminal cymes; bracts of subcampanulate involucre subequal few[5] membranous striate, imbricate. (*N. Mexico.*[6])

364. **Crocidium** Hook.[7]—Flowers[8] fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla elongate entire open; the discal hermaphrodite; limb of tubular corolla suddenly campanulate, 5-dentate. Anthers obtuse at base. Style branches of hermaphrodite flowers short flattened, rhomboid at acute apex hirtellate; of female much shorter and obtuse. Fruit oblong, transparent-papillose; the radial bare; the discal crowned with thin barbellate hairs.—An annual; leaves basal rosulate spathulate, sometimes coarsely and remotely dentate or unequally 3-lobed; the cauline linear entire; capitules[9] terminal solitary long-stipitate; bracts of broadly campanulate involucre membranous, often scarious at margin, connate at base; receptacle convex and bare.[10] (*West. N. America.*[11])

365. **Melalema** Hook. f.[12]—"Flowers[13] fertile, 2-morphous; the radial female, 1-seriate; corolla thin shorter than style; limb (not distinct) obliquely truncate at apex; the discal hermaphrodite; tube of regular corolla short; limb cylindrical, shortly 5-dentate. Anthers truncate or obtuse at entire base. Style branches of hermaphrodite flowers linear penicillate at truncate apex. Fruit oblong angular glabrous, truncate at apex.—A low

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[1] Spec. 12, 13. H. B. K. *Nov. gen. et spec.* iv. t. 362, 363.—Hombr. et Jacquin. *D'Urv. Voy. pôle sud, Bot.* t. 11.—Wedd. *Chlor. andin.* i. 137, t. 22, 23.—Walp. *Rep.* vi. 254; *Ann.* ii. 908; v. 295.

[2] *Pl. Fendler.* 109.—B. H. *Gen.* ii. 441, n. 568.

[3] "Yellow."

[4] Small.

[5] Oftener 4, 5.

[6] Spec. 1. *H. Greggii* A. Gray.—Walp. *Ann.* ii. 909.

[7] *Fl. bor.-amer.* i. 335, t. 118.—DC. *Prodr.* vii. 301.—Endl. *Gen.* n. 2812 ^{1}.—B. H. *Gen.* ii. 440, n. 566.—A. Gray, *Proc. Amer. Acad.* ix. 206.

[8] Yellow.

[9] Moderate.

[10] Genus connecting the *Senecioideæ* with the true *Astereæ*.

[11] Spec. 1. *C. multicaule* Hook.

[12] *Fl. antarct.* ii. 311.—B. H. *Gen.* ii. 443, n. 575.

[13] Yellow.

cæspitose and much branched or spreading and densely foliate herb; leaves[1] alternate crowded spathulate entire, glabrous above, white tomentose beneath; capitules[2] solitary, closely sessile between the uppermost leaves; bracts of campanulate involucre ∞-seriate; the inner little unequal, membranous at apex, sphacelate, 1–2-seriate; the outer shorter or the outermost foliaceous and resembling the cauline leaves; receptacle flat and bare." (*Magellania.*[3])

366. **Hertia** Less.[4]—Flowers[5] 2-morphous; the radial female fertile, 1-seriate; corolla either ligulate; limb entire or 2–3-dentate, open; or unequally truncate shortened; the discal hermaphrodite sterile; limb of tubular corolla cylindrical or narrow-campanulate, 5-dentate or fid. Anthers entire at base. Style branches of hermaphrodite flowers linear or short rather compressed, truncate or penicillate at apex; of female narrower. Radial fruit oblong, not or slightly 5–10-costate, variously clothed; pappus hairs[6] ∞, thin, ∞-seriate; the discal thinner glabrous vacuous; pappus hairs fewer or shorter.—Rather fleshy glabrous undershrubs[7]; leaves alternate sessile, entire or sparsely dentate; capitules[8] stipitate terminal solitary or in a foliate cyme few; bracts of subcampanulate involucre oblong more or less deeply valvately connate, finally free, patulous or reflexed; receptacle flat or rather convex. (*N. and S. Africa, West. Asia.*[9])

367. **Raillardia** Gaudich.[10]—Flowers[11] hermaphrodite fertile, 1-morphous; limb of regular tubular corolla cylindrical or campanulate, 5-fid or dentate. Anthers entire at base. Style branches with lanceolate subulate hirtellate appendages. Fruit elongate narrow, 4–5-angled or ∞-striate; pappus hairs rigid plumose ciliate, 1–2-seriate.—Cæspitose shrubs or herbs; stem thick short woody; leaves basal rosulate, alternate opposite or

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[1] Small.

[2] Rather small or moderate.

[3] Spec. 1. *M. humifusum* Hook. f.—Walp. *Rep.* vi. 250 (*Melalemma*).—*Baccharis humifusa* Banks et Soland. herb.

Linnæa, vi. 94 (1831).—DC. *Prodr.* vi. 483.—Endl. *Gen.* n. 2819.—?Neck. *Elem.* i. 8 (prior.).—*Othonnopsis* Jaub. et Spach, *Ill. pl. or.* iv. 90, t. 357.—B. H. *Gen.* ii. 451, n. 589.

[5] Yellow.

[6] White.

[7] Often glaucescent.

[8] Rather large or small.

[9] Spec. 7, 8. L. *Spec.* 1310 (*Othonna*).—DC. *Prodr.* vi. 476, n. 20, 477, n. 28 (*Othonna*).—Harv. and Sond. *Fl. cap.* iii. 321, 322, 332 (*Othonna, Doria*).—Boiss. *Diagn. or.* ser. 2, vi. 106 (*Othonna*); *Fl. or.* iii. 414 (*Othonnopsis*).—Clarke, *Compos. ind.* 210 (*Othonna*).—Hook. f. *Fl. brit. Ind.* iii. 356 (*Othonnopsis*).—*Bot. Reg.* t. 266 (*Othonna*).—Walp. *Ann.* v. 350 (*Othonnopsis*).

[10] *Freycin. Voy. Bot.* 469, t. 83.—Endl. *Gen.* n. 2815.—A. Gray, *Proc. Amer. Acad.* v. 132.—B. H. *Gen.* ii. 442, n. 572.

[11] Yellow.

ternately verticillate, entire, coriaceous, nitid, glabrous or sericeous; capitules[1] stipitate solitary or in terminal or axillar corybiform cymes few; bracts of cylindrical campanulate involucre 1-seriate, valvately coherent or free; receptacle flat or convex bare or setosely fringed.[2] (*Sandwich Is.*, *California.*[3])

368. **Robinsonia** DC.[4]—Flowers[5] diœcious; the radial female; limb of ligulate corolla 2–3-dentate, open or short concave; the discal hermaphrodite;[6] limb of tubular corolla in male capitules narrow campanulate; in female not or scarcely expanded and short, all 5-partite or dentate. Anthers (in female capitules thick or rudimentary, free) obtuse at base. Branches of longer style of hermaphrodite flowers in female capitules short obtuse; in male shorter truncately penicillate, or style entire penicillate or emarginate. Fruit oblong, thickly 5-costate; cotyledons of not or very slightly albuminous embryo nearly flat, undulate or convolute; pappus hairs[7] short, sometimes connate at base in a short cupular ring, scabrous or denticulate, caducous.—Small trees or shrubs resinous glabrous; branches marked with scars of fallen leaves; leaves alternate collected in upper twigs elongate, often sessile, entire membranous, obliquely veined; capitules[8] in compound corymbiform cymes; bracts of subcampanulate involucre equal or unequal, 1-seriate, valvately approximate (not connate); the outer minute sometimes few or 0; receptacle nearly flat bare or minutely foveolate. (*I. Fernandez.*[9])

369. **Vendredia** H. Bn.[10]—Flowers[11] (nearly of *Robinsonia*) diœcious few (2–4); limb of tubular corolla cylindrical (or in female capitules short rigid not expanded), 5-dentate. Anthers obtuse at base (in female capitules rudimentary or thick free).

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[1] Rather large or small.

[2] Sect. of genus with 1-headed scape, short thick stem and rosulate leaves, is *Raillardella* A. Gray, *Proc. Amer. Acad.* vi. 550; ix. 207.—B. H. *Gen.* ii. 442, n. 573 (*California*).

[3] Spec. 10, 11. *Bot. Mag.* t. 5517.

[4] *Guillem. Arch. bot.* ii. 333; *Prodr.* vi. 447 (not Schreb.).—Deless. *Ic. sel.* iv. t. 63, 64.—Endl. *Gen.* n. 2821.—B. H. *Gen.* ii. 441, n. 570.

[5] "Yellow."

[6] In male capitules sterile; in female fertile.

[7] White, thin.

[8] Small, numerous.

[9] Spec. 4. Dcne, *Ann. sc. nat.* sér. 2, i. 16, t. 1, B, C.—Remy, *C. Gay Fl. chil.* iv. 123.

[10] *Balbisia* DC. *Guillem. Arch. bot.* ii. 333; *Prodr.* vi. 447 (not W., nor Cav.).—Deless. *Ic. sel.* iv. t. 62.—Dcne, *Ann. sc. nat.* sér. 2, i. 16, t. 1, A.—Endl. *Gen.* n. 2820.—B. H. *Gen.* ii. 442, n. 571.—*Ingenhousia* Bert. herb. (ex DC., not Sess. et Moc.).

[11] "Yellow."

Fruit oblong, 5-angled; pappus hairs ∞, unequal thin (in vacuous fruit of male capitules corrugate or crispulous, caducous).—Small resinous trees; branches, alternate leaves aggregated at ends of twigs &c. of *Robinsonia*; limb entire or serrulate above; capitules cylindrical in a terminal compound spiciferous raceme; bracts of narrow tubular subcylindrical involucre few (2–4) approximate in a tube free, imbricate; receptacle small and bare. (*I. Fernandez.*[1])

370. **Faujasia** Cass.[2]—Flowers[3] regular fertile, 2-morphous; the radial female, 1-seriate; corolla narrow-campanulate, 4–5-fid; the discal hermaphrodite; corolla limb broader, 5-fid. Anthers minutely dentate or mucronate at shortly sagittate base. Style branches of hermaphrodite flowers dilated truncate penicillate at apex. Fruit oblong striate glabrous; pappus hairs few-∞, scabrous or shortly barbellate. — Glabrous shrubs; leaves alternate, sometimes congested, linear[4] or amplexicaul; capitules[5] in terminal cymiferous densely corymbiform racemes; bracts of cylindrical or campanulate involucre equal, 1-seriate, more or less coherent; in addition some small outer 1–2-seriately imbricate; receptacle nearly flat, convex or conical. (*Mascarene Is.*[6])

371. **Eriothrix** Cass.[7]—Flowers[8] fertile regular, 2-morphous (nearly of *Faujasia*); the outer female few; the inner hermaphrodite; corolla tubular; limb narrow-campanulate, 4–5-dentate, in female flower narrower and shorter. Anthers obtuse at base. Style branches of hermaphrodite flowers truncate, sometimes penicillate; of female narrower recurved. Fruit linear oblong, terete or rather compressed striate; pappus hairs ∞, thin rather scabrous.—A small glabrous shrub;[9] leaves alternate congested numerous adpressedly imbricate subulate rigid; the last (conformed[10]) involucrating the base of the terminal and sessile

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[1] Spec. 1. *V. Berterii* H. Bn.—*Balbisia Berterii* DC.—Remy, *C. Gay Fl. chil.* iv. 123.—*Ingenhousia thurifera* Bert. herb.

[2] *Bull. Soc. philom.* (1819), 80; *Dict. sc. nat.* xvi. 247.—DC. *Prodr.* vi. 293.—Endl. *Gen.* n. 2787.—B. H. *Gen.* ii. 443, n. 576.

[3] Yellow and nearly of *Senecio*; corolla except radial regular.

[4] Sometimes ericoid.

[5] Small, numerous.

[6] Pers. *Syn.* ii. 436 (*Senecio*).—Spreng. *Syst.* iii. 554 (*Senecio*).—Bak. *Fl. maur.* 174.

[7] *Bull. Soc. philom.* (1817), 32; *Dict. sc. nat.* xv. 200 (*Eriothrix*).—DC. *Prodr.* vi. 293.—Endl. *Gen.* n. 2787.—B. H. *Gen.* ii. 443, n. 574.

[8] Pale yellowish.

[9] Habit of *Lycopodium clavatum*.

[10] Or the inner few shorter, transparent at dilated margin.

capitules; receptacle rather convex minutely foveolate. (*Borbonia.*[1])

372. **Tetradymia** DC.[2]—Flowers[3] hermaphrodite fertile, 1-morphous; tube of regular corolla thin; limb campanulate deeply 5-fid. Anthers entire or shortly auriculate at base. Style branches terete or flattened, truncate or shortly conical penicillate at apex. Fruit oblong terete, or glabrous, or long-sericeous-villose; pappus hairs sometimes continuous with and conformed to hairs of ovary (or fruit).—Hoary lanate or tomentose shrubs, unarmed or with spinescent abortive branches; leaves alternate entire; capitules[4] axillar or terminal on short axillar twigs, sometimes corymbiform-cymose; bracts of oblong or subcampanulate involucre few (4), or 5-∞, 1–2-seriate, obtuse or acute, subequal, or the outer gradually smaller, externally pubescent or tomentose, rigid or coriaceous, imbricate; receptacle narrow and bare. (*West. N. America.*[5])

373. **Lopholæna** DC.[6]—Flowers (nearly of *Senecio*) hermaphrodite fertile, 1-morphous; limb of regular tubular corolla cylindrical, elongate, shortly 5-dentate. Anthers truncate or very shortly auriculate at entire base. Style branches subterete long linear appendiculate; appendages dorsally or generally hirtellate. Fruit oblong, ∞-striate; pappus hairs ∞, thin scabrous or thinly barbellate, ∞-seriate.—Glabrous shrubs or undershrubs; leaves[8] alternate sessile oval or elliptico-oblong entire rather fleshy, thinly many-nerved; capitules[9] in a dense terminal foliate cyme or solitary;[10] bracts of ovoid or narrower subcylindrical involucre few broad, 1-seriate, herbaceous, sometimes cristate at back or with a vertical foliaceous appendage, attenuate at margin scarious or transparent imbricate; receptacle nearly flat foveolate. (*S. Africa.*[11])

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[1] Spec. 1. *E. lycopodioides* DC.—*E. juniperifolia* Cass. *Dict.* xv. 200.—*Conyza lycopodioides* Lamk, *Dict.* ii. 91; *Ill.* t. 697, fig. 2.—? *Baccharis lycopodioides* Pers. *Syn.* ii. 425.

[2] *Prodr.* vi. 440.—Deless. *Ic. sel.* iv. t. 60.—Endl. *Gen.* n. 2814.—B. H. *Gen.* ii. 450, 1236, n. 588.—*Lagothamnus* Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 416.

[3] Yellow.

[4] Moderate.

[5] Spec. 4, 5. Torr. et Gray, *Fl. N.-Amer.* ii. 447; *Beckw. Exp. Bot.* 8; *Proc. Amer. Acad.* viii. 290 (*Linosyris*); ix. 207.—Dur. *Pacif. Railr. Expl.* 8 (*Carphephorus*).—Walp. *Ann.* v. 348.

[6] *Prodr.* vi. 335.—Deless. *Ic. sel.* iv. t. 59.—Endl. *Gen.* n. 2808.—B. H. *Gen.* ii. 441, n. 569.

[7] Yellowish at base and white at apex (DC.).

[8] Sometimes nearly of *Cerinthe.*

[9] Moderate.

[10] And there large.

[11] Spec. 2. Harv. and Sond. *Fl. cap.* iii. 314.—Hook. *Icon.* t. 1113.

374. **Doronicum** T.[1]—Flowers[2] fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla elongate open, entire or 2-3-dentate; the discal hermaphrodite; limb of tubular corolla cylindrical or narrow-campanulate, 5-fid. Anthers entire or minutely auriculate at base.[3] Style branches of hermaphrodite flowers flattened sometimes with penicillate and shortly obtuse or longer and rather acute appendages, finally recurved; of female flowers thinner. Fruit linear or oblong, terete or 5–10-costate; pappus hairs ∞, rather rigid scabrous or barbellate, sometimes 0.[4]—Perennial herbs, glabrous, villosulose or glandular; leaves opposite or alternate, oftener rosulate at base; capitules long stipitate, solitary or cymose few; bracts of broadly campanulate, obconical or subhemispherical involucre herbaceous acute or acuminate, 1–2-seriate; receptacle more or less convex, bare, villosulose or fringed.[5] (*Temp. Europe, Asia and N. America.*[6])

375. **Othonna** L.[7]—Flowers[8] 2-morphous; the radial female fertile, 1-seriate; corolla either ligulate; limb open, entire or 3-dentate; or thin shortened truncate; the discal hermaphrodite sterile; limb of tubular corolla cylindrical more or less expanded or campanulate, 5-fid. Anthers entire or very shortly auriculate at base. Style of hermaphrodite flowers undivided, penicillate at capitate apex. Radial fruit fertile oblong, 5–10-costate; pappus hairs ∞ (white or coloured) ∞-seriate; discal cylindrical

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[1] *Inst.* 487, t. 277.—L. *Gen.* n. 959.—J. *Gen.* 182.—Gærtn. *Fruct.* ii. t. 173.—Less. *Syn.* 390.—DC. *Prodr.* vi. 320.—Spach, *Suit. à Buffon*, x. 270.—Endl. *Gen.* n. 2802.—B. H. *Gen.* ii. 440, n. 565.—*Aronicum* Neck. *Elem.* i. 27.—DC. *Prodr.* vi. 319.—Endl. *Gen.* n. 2801.—*Grammarthron* Cass. *Bull. Soc. philom.* (1817), 32; *Dict.* xix. 294—*Fullartonia* DC. *Prodr.* v. 281.—Endl. *Gen.* n. 2328.

[2] Yellow or pale golden.

[3] Filaments sometimes articulate above.

[4] Disk epigynous girt with base of style, sometimes little developed.

[5] Sect. of genus with opposite leaves, style branches more acutely appendiculate and receptacle less raised is *Arnica* L. *Gen.* n. 958.— x. *Fruct.* ii. t. 173.—DC. *Prodr.* vi. 317. *Gen.* n. 2800.—B. H. *Gen.* ii. 440, n. 564.

[6] Spec. about 20. Jacq. *Fl. austr.* t. 92, 349 (*Arnica*), 130, 350; *Ic. rar.* t. 586 (*Arnica*).—All. *Fl. pedem.* t. 17 (*Arnica*).—Lois. *Fl. gall.* t. 20 (*Arnica*).—Reichb. *Ic. Fl. germ.* t. 953, 954 (*Aronicum*), 955–957; 958 (*Arnica*).—Hook. *Fl. bor.-amer.* t. 111 (*Arnica*).—Torr. *Fl. New-York*, t. 60 (*Arnica*).—Ten. *Fl. nap.* t. 79.—Boiss. *Diagn. or.* ser. 2, iii. 31; *Fl. or.* iii. 378.—Chapm. *Fl. S. Unit. St.* 246 (*Arnica*).—Fr. et Sav. *Enum. pl. jap.* i. 245 (*Arnica*).—Hook. f. *Fl. brit. Ind.* iii. 332.—Eat. *Unit. St. Fort. parall. expl. Bot.* 186 (*Arnica*).—Willk. et Lge, *Prodr. Fl. hisp.* ii. 107.—Gren. et Godr. *Fl. de Fr.* ii. 107; 108 (*Aronicum*), 110 (*Arnica*).—*Bot. Mag.* t. 1749 (*Arnica*), 3143.—Walp. *Rep.* ii. 651 (*Arnica*), 652; vi. 253; *Ann.* ii. 907; v. 292 (*Arnica*), 293.

[7] *Gen.* n. 993.—Cass. *Dict.* lviii. 462.—Less. *Linnæa*, vi. 94; *Syn.* 89.—Endl. *Gen.* n. 2828 (part.).—B. H. *Gen.* ii. 453, n. 595.—*Doria* Less. *Linnæa*, vi. 94 (not Adans., nor Thunb.).—Sch. bip. *Flora* (1844), 769.—*Ceradia* Lindl. *Bot. Reg.* (1845), *Misc.* 12.—*Doria* Thunb. *Fl. cap.* 673 (part.).

[8] Yellow or sometimes cyaneous.

vacuous; pappus hairs fewer oftener caducous.—Glabrous herbs, undershrubs or shrubs; leaves alternate or basal, often rather fleshy, entire, dentate or dissected, sometimes amplexicaul; capitules[1] stipitate solitary or in more or less compound corymbiform cymes; involucre often shortly campanulate; bracts generally equal, 1-seriate and more or less connate; receptacle flat or convex, bare or foveolate. (*S. Africa.*[2])

376. **Gymnodiscus** Less.[3]—Flowers 2-morphous; the radial female fertile, 1-seriate; limb of ligulate corolla open, entire or minutely dentate; the discal hermaphrodite sterile; limb of regular tubular corolla narrow-campanulate, 5-fid or dentate. Anthers entire at base. Style of hermaphrodite flowers undivided, penicillate at capitellate apex; of female slenderly 2-branched. Radial fruit unequally obovoid compressed canescent;[4] pappus hairs few short, caducous; the discal thin vacuous; pappus 0.—Glabrous annuals; leaves basal rosulate lyrately pinnatifid; the cauline few narrow, dissected or sometimes entire; capitules[5] in terminal corymbiform cymes; bracts of subcampanulate involucre few, free or connate at base; receptacle small nearly flat bare. (*S. Africa.*[6])

377. **Euryops** Cass.[7]—Flowers[8] fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla open elongate, entire or very shortly dentate; the discal hermaphrodite; limb of regular corolla tubular or campanulate, oftener deeply 5-fid. Anthers entire or minutely auriculate at base. Style branches of hermaphrodite flowers compressed, penicillate at truncate apex; of female shorter and narrower. Fruit ovoid or elongate, glabrous or villose, 10-costate; pappus hairs[9] numerous thin interwoven or intricate, scabrous or barbellate.—Glabrous or tomentose shrubs; leaves alternate, entire, incised or pinnatisect, generally crowded; capitules[10] stipitate terminal or axillar to upper leaves; involucre

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[1] Small or moderate.

[2] Spec. about 75. Jacq. *Hort. schœnbr.* t. 238, 240, 241, 376.—Harv. and Sond. *Fl. cap.* iii. 320, 328 (*Othonna*, *Doria*).—Harv. *Thes. cap.* t. 15.—DC. *Plant. grass.* t. 48 (*Cacalia*).—Saund. *Ref. Bot.* t. 225, 253.—*Bot. Mag.* t. 768, 1312, 1979, 3067, 4038.—Walp. *Rep.* vi. 727 (*Ceradia*).

[3] *Syn.* 89.—Endl. *Gen.* n. 2827.—B. H. *Gen.* ii. 452, n. 594.

[4] With a dense moist mucilage.

[5] Small or minute.

[6] Spec. 2. L. f. *Suppl.* 388 (*Othonna*).—Thunb. *Fl. cap.* 721 (*Othonna*).—Harv. and Sond. *Fl. cap.* iii. 345.

[7] *Bull. Soc. philom.* (1818), 140; *Dict.* xvi. 49 (part.).—DC. *Prodr.* vi. 443.—Endl. *Gen.* n. 2819.—B H. *Gen.* ii. 452, n. 592.—*Enantiotrichum* E. Mey. herb. *Drège*.

[8] Yellow.

[9] Or rather with numerous hairs at the bottom of the corolla graduating into a pappus.

[10] Small or rather large.

hemispherical or broadly or very broadly campanulate; bracts equal, 1-seriate, more or less cyathiformly connate; receptacle flat or more or less convex, bare, foveolate or fringed. (*Trop. S. and E. Africa.*[1])

378. **Werneria** H. B. K.[2]—Flowers[3] fertile, 2-morphous or (by defect of radial) 1-morphous; the radial female, 1-seriate; limb of ligulate corolla open, entire or minutely 2-dentate; the discal hermaphrodite; limb of tubular corolla cylindrical expanded, 5-fid or dentate. Anthers entire or minutely auriculate at base. Style branches of hermaphrodite flowers recurved, penicillate or with short acute appendage at truncate apex. Fruit obconical or oblong; pappus hairs ∞, scabrous or shortly barbellate.—Low cæspitose herbs, glabrous, villose or setose; leaves basal rosulate, crowded on oftener short stem, entire dentate or pinnatisect, short or long, sometimes distichous; capitules[4] sessile or more rarely stipitate; bracts of hemispherical or broadly campanulate involucre ∞, equal, more or less cyathiformly connate at base, 1-seriate; receptacle flat or convex bare.[5] (*Andine S. America.*[6])

379. **Oligothrix** DC.[7]—Flowers[8] 2-morphous; the radial female fertile, 1-seriate; limb of ligulate corolla rather broad, entire or few-dentate, open or recurved; the discal hermaphrodite, fertile or sterile; limb of tubular corolla narrow-campanulate, 5-fid. Anthers entire or emarginate at base. Style branches of hermaphrodite flowers truncate penicillate at apex. Fruit oblong, 5-costate[9]; ribs papillosely rugose; pappus hairs short very thin scabrously barbellate, caducous. A slender glabrous annual; leaves few alternate sinuately dentate, amplexicaul at base; capitules[10] in loose cymes; bracts[11] of campanulate involucre equal mem-

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[1] Spec. about 25. Jacq. *Hort. schœnbr.* t. 239, 242 (*Othonna*), 308 (*Cineraria*).—A. Rich. *Fl. abyss.* i. 445, t. 60.—Jaub. et Sp. *Ill. pl. or.* t. 355, 356.—Harv. and Sond. *Fl. cap.* iii. 408.—Oliv. and Hiern, *Fl. trop. Afr.* iii. 422.—*Bot. Reg.* t. 108 (*Othonna*).—*Bot. Mag.* t. 306 (*Othonna*).—Walp. *Ann.* ii. 920; v. 348.

[2] *Nov. gen. et spec.* iv. 189, t. 368, 369.—DC. *Prodr.* vi. 323.—Endl. *Gen.* n. 2803.—B. H. *Gen.* ii. 451, n. 590.—*Oresigonix* W. herb. ex Less. *Syn.* 393.

[3] Discal yellow; radial white, yellow or pink.

[4] Large or moderate.

[5] A genus very near *Senecio.* (?) Congen. *Oribasia* Sess. et Moc. *Fl. mex. ined.* (ex DC.)?

[6] Spec. 15, 16. Remy, *C. Gay Fl. chil.* iv. 213, t. 47.—Wedd. *Chlor. andin.* i. 80, t. 16, 17.—A. Gray, *Proc. Amer. Acad.* v. 139.—Walp. *Rep.* vi. 254; *Ann.* ii. 908; v. 295.

[7] *Prodr.* vi. 304.—Deless. *Ic. sel.* iv. t. 57.—Endl. *Gen.* n. 2795.—B. H. *Gen.* ii. 452, n. 591

[8] Yellow.

[9] Slightly mucilaginous.

[10] Small.

[11] In the middle sometimes oily striated (hence strongly odorous).

branous, connate to middle in a cup; receptacle flat or rather convex bare. (*S. Africa.*[2])

380. **Gamolepis** Less.[3]—Flowers[4] fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla open, entire or more rarely few-dentate; the discal hermaphrodite; limb of tubular corollas 5-fid. Anthers entire at base; filaments thickened to apex. Style branches of hermaphrodite flowers penicillate or very shortly appendiculate at truncate apex; of female obtuse recurved. Fruit oblong, straight or curved, glabrous, 5–10-costate; pappus 0, or in radial very short fimbriately crenulate.—Shrubs or herbs, glabrous or lanate; leaves alternate, entire or dissected, sometimes crowded small rather rigid[5]; capitules[6] stipitate; bracts of campanulate or subhemispherical involucre more or less deeply and cyathiformly connate, 1-seriate; receptacle flat or more or less convex, bare or foveolate. (*S. Africa.*[7])

381. **Liabum** Adans.[8]—Flowers[9] fertile, 2-morphous, or (by defect of the radial) 1-morphous; the radial female, 1–2-seriate (or 0); limb of ligulate corolla open, elongate or narrow, 2–3-dentate or entire; the discal hermaphrodite; limb of (sometimes very thin) tubular corolla cylindrical, 5-fid or dentate. Anthers rather obtusely or acutely auriculate at base. Style branches of hermaphrodite flowers linear or subulate, often rather obtuse, generally hirtellate. Fruit obconico-oblong, often striatellate, glabrous or villose; pappus hairs ∞, 1–2-seriate, free or connate in a persistent ring at base, thin, barbellate or scabrous; the outer either paleaceous, or very thin.—Herbs or shrubs; stem erect branched or sometimes subnil; indumentum various, hirsute, tomentose or scabrous, sometimes composed of articulate hairs, or

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[1] A genus hence very near to *Senecio*, thence to *Gymnodiscus*, from which it differs in the discal styles being 2-branched and flowers sometimes fertile.

[2] Spec. 1. *O. gracilis* DC.—Harv. and Sond. *Fl. cap.* iii. 306.

[3] *Syn.* 251.—DC. *Prodr.* vi. 41.—Endl. *Gen.* n. 2656.—B. H. *Gen.* ii. 452, n. 593.—*Psilothamnus* DC. *Prodr.* vi. 41.—Endl. *Gen.* n. 2657.—*Jacquemontia* Bél. *Voy. Icon.* t. 10 (not Chois.).

[4] Yellow.

[5] Sometimes ericoid.

[6] Small or moderate.

[7] Spec. 10–12. L. *Spec.* 1309 (*Othonna*).—Harv. and Sond. *Fl. cap.* iii. 156.

[8] *Fam. des pl.* ii. 131.—DC. *Prodr.* v. 96; vii. 266.—Endl. *Gen.* n. 2245.—B. H. *Gen.* ii. 435.—*Andromachia* H. B. *Plant. æquin.* ii. 104, t. 112.—Less. *Linnæa*, iv. 318.—DC. *Prodr.* v. 95; vii. 265.—Endl. *Gen.* n. 2244.—*Munnozia* R. et Pav. *Prodr. Fl. per.* 108, t. 23.—DC. *Prodr.* vii. 259.—*Starkea* W. *Spec.* iii. 2216.—*Oligactis* Cass. *Dict.* xxxvi. 16.—*Sinclairia* Hook. and Arn. *Beech. Voy. Bot.* 433.—*Paranephelius* Pœpp. et Endl. *Nov. gen. et spec.* iii. 42, t. 248.—*Prionolepis* Pœpp. et Endl. *loc. cit.* iii. 55, t. 261.—*Alibum* Less. *Syn.* 152.—DC. *Prodr.* v. 97.—Endl. *Gen.* n. 2246.—*Erato* DC. *Prodr.* v. 317.—Endl. *Gen.* n. 2366.—*Kastnera* Sch. bip. *Flora* (1853), 37.—*Chrysactinium* Wedd. *Chlor. andin.* i. 212, t. 39.

[9] Yellow (or ? white).

0; leaves opposite, entire, dentate or lobed; capitules[1] solitary, sessile or shortly stipitate, or oftener in more or less branched compound cymes; bracts of campanulate or rather broadly hemispherical involucre ∞, herbaceous or membranous, acute or obtuse at apex; the outer gradually smaller; receptacle more or less convex, bare, alveolate, fringed or loaded with lacerate or striate deciduous pales.[2] (*Trop. and subtrop. N. and S. America.*[3])

382. **Neurolæna** R. Br.[4]—Flowers[5] (nearly of *Liabum*) hermaphrodite, mostly fertile, 1-morphous; limb of regular tubular corolla cylindrical. Anthers minutely auriculate. Style branches thin acute recurved papillose. Fruit obconically oblong glabrous or pilose; pappus hairs ∞, thin, sometimes slightly scabrous, 1–2-seriate.—Scabrous undershrubs; leaves alternate; the lower sometimes 3-lobed; capitules in loose compound cymes; bracts of campanulate involucre pluriseriately imbricate; the outer gradually shorter; receptacle rather convex, loaded with caducous, 1-nerved pales under each flower.[6] (*Antilles, Columbia.*[7])

383? **Gongrothamnus** Steetz.[8]—Flowers hermaphrodite fertile, 1-morphous; tube of regular corolla long; limb narrow-campanulate, 5-fid. Anthers long and obtusely auriculate at sagittate base. Style branches thin rather compressed and acute recurved. Fruit oblong, truncate at apex, 10-costate; pappus hairs ∞, thin scabrously barbellate, persistent, 1–2-seriate.—Divaricately branched shrubs, "subscandescent;" leaves alternate, entire or widely dentate, 3-plinerved; capitules[9] in compound corymbiform cymes; bracts of obconico-campanulate involucre ∞, narrow acute, ∞-seriate; the inner sometimes gradually narrower at apex; the outer gradually smaller. (*East. trop. Africa.*[10])

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[1] Rather large or small.

[2] A sect. of the genus apparently is *Schistocarpha* Less. *Linnæa*, vi. 409.—B. H. *Gen.* ii. 437, n. 554.—*Neilreichia* Fenzl, *Denkschr. Akad. Wiss. Wien.* i. 258, t. 30: receptacle paleaceous between flowers; leaves same colour on both sides. (*Mexico.*)

[3] Spec. about 40. H. B. K. *Nov. gen. et spec.* iv. t. 336–338 (*Andromachia*).—Hook. *Icon.* t. 451 (*Sinclairia*).—Link, Kl. et Ott. *Ic. pl. rar.* t. 37 (*Schistocarpha*).—Pœpp. et Endl. *Nov. gen. et spec.* t. 249 (*Andromachia*).—Wedd. *Chl andin.* i. 211 (*Andromachia*), 212, t. 39 A (*Chrysactinium*), 213, t. 37 (*Paranephelius*).—*Bot. Mag.* t. 5826 (*Paranephelius*).—Griseb. *b. Fl. argent.* 202.—Walp. *Rep.* ii. 544; vi. 104; 250 (*Schistocarpha*).

[4] R. Br. *Trans. Linn. Soc.* xii. 120.—DC. *Prodr.* vi. 292.—Endl. *Gen.* n. 2786.—B. H. *Gen.* ii. 437, n. 555.

[5] Whitish.

[6] Rather perhaps a sect. of *Schizolæna*, notwithstanding the alternate leaves?

[7] Spec. 2. L. *Spec.* 1207 (*Conyza*).—Sw. *Prodr.* 113 (*Calea*).—Gærtn. *Fruct.* ii. 408, t. 174 (*Calea*).—*Bot. Mag.* t. 1734 (*Calea*).

[8] *Pet. Mossamb. Bot.* 336.—B. H. *Gen.* ii. 437, n. 556.

[9] Rather large, yellow.

[10] Spec. 2, 3. Boj. *DC. Prodr.* v. 30, n. 87 (*Vernonia*).—Vatke, *Œsterr. Bot. Zeitschr.* (1875), 323 (*Vernonia*).—Benth. *Hook. Icon.* t. 1140.—Oliv. and Hiern, *Fl. trop. Afr.* iii. 400.

384? **Allendea** Llav. and Lex.[1]—"Flowers fertile, 2-morphous; the discal female, ∞-seriate; corolla ligulate filiform erect; the discal hermaphrodite few; limb of tubular corolla 5-fid; laciniæ revolute. Fruit . . . ?; pappus hairs pilose.—A tall herb; stem virgate; branches striate sericeous; leaves opposite broadly lanceolate decurrent in a short petiole, connate at base, 3-nerved, silvery sericeous beneath; here and there papillose-denticulate; capitules in a long pedunculate corymb; receptacle paleaceous." (*Mexico.*[2])

385? **Clappia** A. Gray.[3]—"Flowers[4] fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla open, entire or 3-dentate; the discal hermaphrodite; limb of tubular corolla narrow-campanulate or scarcely expanded, semi-5-fid. Anthers entire at obtuse base. Style branches of hermaphrodite flowers linear, 3-angularly appendiculate. Fruit linear cuneate, 10-costate; pappus hairs simple barbellate, subpaleaceous at base, or pales narrow, divided into ∞ hairs, 1-seriate.—Branched glabrous herbs (or undershrubs?); leaves alternate, entire or pinnatisect; capitules[5] solitary at ends of branches; bracts of broadly campanulate or hemispherical involucre, linear, membranous at apex, few-seriate; the outer gradually smaller; receptacle convex, long setoso-fringed."[6] (*Mexico.*[7])

386. **Petasites** T.[8]—Flowers[9] 2-morphous (*Tussilago*[10]), polygamous or subdiœcious (*Eupetasites*[11]); capitules heterogamous; bracts of campanulate or cylindrical involucre equal, 1-seriate; receptacle flat bare. Female flowers ligulate; limb of corolla linear, oftener entire, sometimes short deformed; male and hermaphrodite regular; limb subcampanulate or rather acutely subglobular, valvate. Anthers entire or subauriculate at base, sur-

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[1] *Nov. veg. descr.* i. 10.—DC. *Prodr.* vii. 253.—B. H. *Gen.* ii. 437, n. 553.

[2] Spec. 1, quite unknown to us. *A. lanceolata* Llav. et Lex., "very near *Liabum* and *Schistocarpha.*"

[3] *Torr. Emor. Exp. Bot.* 93.—B. H. *Gen.* ii. 413, n. 409.

[4] 'Yellow (?) or golden."

[5] Rather large or moderate.

[6] "A genus in some respects allied to the *Tagetineæ*, in others to the *Senecionideæ.*" (B. H.)

[7] Spec. 2 (unknown to us). Benth. *Hook. Icon.* t. 1104, 1105.

[8] *Inst.* 451, t. 258.—Gærtn. *Fruct.* ii. 406, t. 166.—Cass. *Dict.* xxxix. 199.—Less. *Syn.* 159.—DC. *Prodr.* v. 206.—Endl. *Gen.* n. 2286.—Payer, *Fam. nat.* 24.—B. H. *Gen.* ii. 438, n. 560.—*Nardosmia* Cass. *Dict.* xxxiv. 186.—Less. *Syn.* 139.—DC. *Prodr.* v. 205.—Endl. *Gen.* n. 2285.

[9] White, ochrous, yellow, or purplish, sometimes scented.

[10] T. *Inst.* 487, t. 276.—Gærtn. *Fruct.* ii. t. 170.—L. *Gen.* n. 952 (part.).—DC. *Prodr.* v. 208.—Endl. *Gen.* n. 2288.—B. H. *Gen.* ii. 438, n. 559: capitules radiate solitary at top of leafless scape.

[11] *Petasites* of authors.

mounted by a process of the connective, coalescent at margin. Disk thick. Style 2-fid at apex or in hermaphrodite flowers subentire. Fruit elongate costate, crowned with numerous very thin rather scabrous pappus hairs.—Herbs oftener white tomentose; rhizome perennial; leaves said to be "radical," orbicular-cordate or reniform, digitately or pedately nerved at base; capitules solitary at end of bracteate scape (*Tussilago*), or from the upper fertile bracts simple or compound racemose.[1] (*Temp. reg. of N. hemisphere E. and W.*[2])

387? **Luina** Benth.[3]—"Flowers[4] hermaphrodite fertile, 1-morphous; limb of tubular corolla elongate subcylindrical, 5-fid. Anthers exserted, 2-mucronate or shortly 2-setose at base. Style branches elongate obtuse, externally papillose. Fruit (immature) subterete glabrous, 10-striate; pappus hairs ∞, thin scabrous.—A perennial snowy floccosely tomentose herb; stem subligneous; leaves alternate, oval or lanceolate entire veined sessile; capitules[5] in terminal corymbiform cymes; bracts of campanulate involucre subequal carinate, sub-1-seriate; the outer few very small or 0." (*N. America.*[6])

388. **Alciope** DC.[7]—Flowers[8] (nearly of *Cremanthodium*[9]) fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla open or finally closely revolute, minutely 3-dentate; the discal hermaphrodite; limb of tubular corolla cylindrical little expanded, 5-fid. Anthers minutely dentate or acuminate at base. Style branches of hermaphrodite flowers flattened, sometimes thickened to apex obtuse; of female shorter. Fruit subterete, 10-∞-nerved; pappus hairs ∞, minutely barbellate, few-seriate. —Perennial herbs, tomentose or lanate; stem simple or slightly

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[1] A sect. of the genus with 2-morphous flowers, hermaphrodite fertile with perfect style, capitules 1–2-nis in scape, is *Homogyne* Cass. *Dict. sc. nat.* xxi. 412.—DC. *Prodr.* v. 204.—Endl. *Gen.* n. 2284.—B. H. *Gen.* ii. 439, n. 561.

[2] Spec. about 15. Jacq. *Fl. austr.* t. 246, 247; *App.* t. 12 (*Tussilago*).—Ledeb. *Ic. Fl. ross.* t. 341 (*Tussilago*).—Reichb. *Icon. Fl. germ.* t. 896–901; 902, 903 (*Homogyne*), 904 (*Tussilago*).—Ait. *H. kew.* t. 11 (*Tussilago*).—Torr. *Fl. N.-York*, t. 49 (*Nardosmia*).—Boiss. *Diagn. or.* ser. 2, iii. 5 (*Tussilago*); *Fl. or.* iii. 376; 377 (*Tussilago*), 378 (*Homogyne*).—Fr. et Sav. *Enum. pl. jap.* i. 220.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 28; 29 (*Tussilago*, *Homogyne*).—Gren. et Godr. *Fl. de Fr.* ii. 88; 91 (*Tussilago*).—*Bot. Mag.* t. 84, 1388 (*Tussilago*).—Walp. *Rep.* ii. 557 (*Nardosmia*); *Ann.* ii. 404 (*Nardosmia*, *Tussilago*).

[3] *Hook. Icon.* t. 1139; *Gen.* ii. 438, n. 558.—A. Gray, *Proc. Amer. Acad.* ix. 206.

[4] "Yellow."

[5] Moderate.

[6] Spec. 1. *L. hypoleuca* Benth., from figure apparently a *Senecioidea* with style of the *Inuleæ* and better perhaps (A. Gray) a sect. of *Tetradymia*.

[7] *Prodr.* v. 209.—Endl. *Gen.* n. 2290.—B. H. *Gen.* ii. 439, n. 563.—*Celmisia* Cass. *Dict.* vii. 356 (not xxxvii. 259).

[8] Yellow.

[9] Scarcely generically different.

branched; leaves alternate petiolate thick, oftener hoary beneath; capitules[1] in a loose terminal long-stipitate cyme; bracts of broadly campanulate or subhemispherical involucre imbricate, pluriseriate; the inner oftener shorter; receptacle convex or nearly flat foveolate. (*S. Africa.*[2])

389. **Cremanthodium** Benth.[3]—Flowers[4] fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla open, entire, 3-dentate or 3-lobed; the discal hermaphrodite; limb of tubular corolla long cylindrical, 5-fid. Anthers entire at base or minutely auriculate. Style of hermaphrodite flowers thickened to apex, branches obtuse compressed, papillose at back, finally recurved; of female thinner. Fruit oblong or contracted towards apex, glabrous 5–10-nerved; pappus hairs ∞, thin scabrously barbellate.—Perennial herbs; leaves[5] mostly rosulate at base, reniform, dentate or pinnatifid; capitules[6] stipitate nutant; bracts of subhemispherical or broadly campanulate involucre[7] membranous, sub-2-seriate, imbricate; receptacle rather convex bare minutely foveolate.[8] (*Himalaya.*[9])

390. **Matricaria** T.[10]—Flowers 2-morphous; the radial female, 1-seriate, fertile or sterile, or neutral; limb of ligulate corolla[11] terete or 2-alate or decurrent at base; limb open, entire or minutely 2–3-dentate; the discal hermaphrodite; tube of regular corolla[12] terete, compressed on both sides, 2-alate, decurrent at base or 1–2-gibbous; limb more or less expanded, cylindrical or campanulate, 4–5-dentate or fid. Anthers entire at obtuse base. Style branches of hermaphrodite flowers penicillate at compressed truncate apex; of female narrower or shorter, more glabrous, or 0. Fruit oblong, sometimes incurved, obtuse or truncate at apex, 3–5-angled or costate, sometimes 8–10-costate or much

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[1] Large or rather so.

[2] Spec. 2. Thunb. *Fl. cap.* 667, 668 (*Arnica*).—Less. *Syn.* 390 (*Ligularia*).—Harv. and Sond. *Fl. cap.* iii. 60.

[3] *Hook. Icon.* t. 1141, 1142; *Gen.* ii. 439, n. 562.

[4] Yellow (?) always?

[5] Few.

[6] Large, showy.

[7] Oftener blackish.

[8] A genus very near *Tussilago*, allied to *Senecio*, differing chiefly in style.

[9] Spec. 4. DC. *Prodr.* vi. 315, n. 7 (*Ligularia*).—Hook. f. *Fl. brit. Ind.* iii. 330.

[10] *Inst.* 493, t. 281.—L. *Gen.* n. 967.—DC. *Prodr.* vi. 50; vii. 297.—Endl. *Gen.* n. 2669.—Spach, *Suit. à Buffon*, x. 182.—B. H. *Gen.* ii. 427, n. 530.—*Chamæmelum* Vis. *Fl. dalm.* ii. 84.—*Lepidanthus* Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 396.—*Lepidotheca* Nutt. *loc. cit.* 397.—*Chamomilla* C. Koch, *Linnæa*, xvii. 45.—Sch. bip. *Tanacet.* 21.—*Courrantia* Sch. bip. *Webb Phyt. canar.* ii. 276, t. 89.—*Rhytidospermum* Sch. bip. *Webb, loc. cit.* 277.—*Tripleurospermum* Sch. bip. *Tanacet.* 31.—*Dibsothrospermum* Knaf, *Flora* (1846), i. 298.—*Gastrostylum* Sch. bip. *Webb, loc. cit.* ii. 277.—*Gastrosulum* Sch. bip. *Tanacet.* 29.—*Sphæroclinium* Sch. bip. *Tanacet.* 20.—*Akylopsis* Lehm. *Ind. sem. H. hamb.* (1850), 3.—*Cotulina* Pom. *Nouv. mat. Fl. atl.* 69.

[11] White or yellow.

[12] Yellow.

striated; pappus short paleaceous, coroniform or auriculiform, often divided or patulous within.—Annual or perennial herbs,[1] glabrous or variously clothed, sometimes shrubby; leaves alternate or rarely opposite, incised-dentate, 1–2-pinnatisect or pinnatifid, rarely entire; capitules[2] terminal stipitate, solitary or loosely corymbiform-cymose; involucre hemispherical, or broadly cupular or sometimes subglobular; bracts imbricate appressed, scarious or fuscous at margin; the outer oftener smaller; receptacle convex or finally conical or elongate rarely flat, bare, fringed or loaded with various pales, sometimes transparent or aristate, subtending or surrounding all or sometimes the outer flowers.[3] (*Warm, temp. and cold reg. of both hemispheres.*[4])

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[1] Sometimes odorous.

[2] Rather large, moderate or small.

[3] Sections of the genus are:

Lidbeckia Berg. *Fl. cap.* 306, t. 5, fig. 9.—Less. *Syn.* 250.—DC. *Prodr.* vi. 39.—Endl. *Gen.* n. 2655.—B. H. *Gen.* ii. 423, n. 524.—*Lancisia* Lamk, *Ill.* t. 701, fig. 2, 3: stem subshrubby; leaves incised; capitules long stipitate; radial flowers sterile; receptacle bare or fringed; fruit 8–10-costate papillose without pappus. (*S. Africa.*)

? *Eumorphia* DC. *Prodr.* vi. 2.—Endl. *Gen.* n. 2636.—B. H. *Gen.* ii. 418, n. 513: stem shrubby; leaves opposite small ericoid; flowers 2-morphous; bracts of subglobose involucre dry; fruit ∞-costate; pappus annular or 0. (*S. Africa.*)

? *Mecomischus* Coss. *Bull. Soc. bot. Fr.* iv. 14 (part.).—B. H. *Gen.* ii. 418, 1235, n. 514.—*Fradinia* Pom. *loc. cit.* 51 (part.): stem herbaceous; leaves opposite or the uppermost alternate, narrow entire stellately pubescent; involucre broad; flowers 2-morphous; radial sterile; fruit epappose. (*N. Africa.*)

Cladanthus Cass. *Bull. Soc. philom.* (1816), 153; *Dict.* ix. 342, t. 87.—Turp. *Dict.* Atl. t. 87.—DC. *Prodr.* vi. 18.—Endl. *Gen.* n. 2646.—B. H. *Gen.* ii. 421, n. 520: stem herbaceous annual; leaves alternate (odorous) 1–2-pinnatisect; capitules sessile to dichotomies and girt with 4–6 floral leaves; flowers 2-morphous, &c., of *Anthemis*.

? *Leucampyx* A. Gray, ex Benth. *Gen.* ii. 422, n. 521: "stem herbaceous; leaves 2–3-pinnatisect; flowers 2-morphous; style branches shortly appendiculate; fruit dorsally compressed, 3-quetrous, epappose; other characters of *Anthemis*." (*N. Mexico.*)

Thaminophyllum Harv. *Fl. cap.* iii. 155.—B. H. *Gen.* ii. 423, n. 525: stem shrubby branched, pubescent or villose; leaves alternate linear small entire; capitules shortly stipitate; flowers 2-morphous; radial few sterile; fruit epappose; style persistent to base. (*S. Africa.*)

Anacyclus L. *Gen.* n. 969.—DC. *Prodr.* vi. 15.—Endl. *Gen.* n. 2643.—B. H. *Gen.* ii. 419, n. 515.—*Hiorthia* Neck. *Elem.* i. 97.—*Cyrtolepis* Less. *Linnæa*, vi. 166.—DC. *Prodr.* vi. 17.—Endl. *Gen.* n. 2644.—*Leucocyclus* Boiss. *Diagn. or.* xi. 13.—*Arthrolepis* Boiss. *loc. cit.* 14: stem herbaceous; caudex perennial sometimes thick; leaves alternate, 2–3-pinnatisect; capitules stipitate; flowers 1–2-morphous; fruit dorsally compressed; outer 2-alate; pappus unequal continuous or alternating with wings; receptacle paleaceous. (*Europe, W. Asia, N. Africa.*)

Anthemis L. *Gen.* n. 970.—J. *Gen.* 185.—DC. *Prodr.* vi. 4.—Spach, *Suit. à Buffon*, x. 186.—Endl. *Gen.* n. 2639.—B. H. *Gen.* ii. 420, n. 519.—*Lepidophorum* Neck. *Elem.* i. 14.—DC. *Prodr.* vi. 19.—Endl. *Gen.* n. 2647.—*Maruta* Cass. *Bull. Soc. philom.* (1818); *Dict.* xxix. 174.—DC. *Prodr.* vi. 13.—Endl. *Gen.* n. 2640.—*Ormenis* Cass. *Bull. Soc. philom.* (1818); *Dict.* xxxvi. 355.—DC. *Prodr.* vi. 18.—Endl. *Gen.* n. 2645.—*Chamæmelum* Cass. *Dict.* xxix. 179, 185.—*Lyonnetia* Cass. *Dict.* xxxiv. 106.—DC. *Prodr.* vi. 14.—*Marcelia* Cass. *Dict.* xxxiv. 107.—*Cota* J. Gay, *Guss. Syn. Fl. sic.* ii. 866.—*Chamomilla* Godr. *Fl. Lorr.* ii. 19 (not Sch. Bip., nor C. Koch).—*Peridercæa* Webb. *It. hispan.* 37.—*Retinolepis* Coss. *Bull. Soc. bot. Fr.* iii. 107: stem herbaceous or shrubby at base; leaves alternate pinnatisect (sometimes very odorous); capitules stipitate; receptacle conical or oblong and (as in preceding sections) paleaceous between the flowers, at least the outer; flowers 1–2-morphous; fruit 4–5-gonal or ∞-costate; pappus short coroniform, auriculiform or 0. (*Cold and temp. reg. of Old World.*)

[4] Spec. about 80 (descr. about 110). L. *H.*

391 ? **Chrysanthemum** T.[1]—Flowers,[2] &c., nearly of *Matricaria*;[3] the radial fertile, sterile or 0; the discal hermaphrodite, fertile or sterile; corolla tube terete, 2-alate or decurrent at base. Fruit equally or unequally 5–10-costate, 5-angled or 3-quetrous in circuit; pappus annular, coroniform, auriculiform or composed of ∞ very short scales.—Annual, perennial or more rarely shrubby herbs;[4] leaves alternate, entire, dentate, incised or dissected; capitules[5] stipitate solitary or in more or less compound corymbiform cymes; bracts of broadly cupular, hemispherical or campanulate involucre ∞, imbricate, appressed, oftener partly scarious or fuscous at margin, ∞-seriate;[6] receptacle nearly flat or

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f. t. 24 (*Buphthalmum*).—Jacq. *Fl. austr.* t. 444 (*Anthemis*).—W. *Hort. berol.* t. 62 (*Anthemis*).—Vahl, *Symb.* t. 46 (*Anthemis*).—Labill. *Pl. syr. Dec.* iii. t. 9 (*Anthemis*).—Deless. *Icon. sel.* iv. t. 48 (*Tanacetum*).—Hook. *Fl. bor.-amer.* t. 110 (*Tanacetum*).—Brot. *Fl. lus.* t. 28 (*Anthemis*), 163 (*Anacyclus*).—Ten. *Fl. nap.* t. 81, 82 (*Anthemis*).—Guss. *Pl. rar. sicul.* t. 60 (*Anthemis*).—Del. *Fl. eg.* t. 45, 47 (*Anthemis*).—Sibth. *Fl. græc.* t. 880–887, 889, 890 (*Anthemis*).—Sm. *Spicil.* t. 10 (*Anthemis*).—Bory et Chaub. *Exp. Morée, Bot.* t. 39 (*Anacyclus*).—Reichb. *Ic. Fl. germ.* t. 995 (*Chamæmelum*), 997; 999 (*Anacyclus*), 1000–1011 (*Anthemis*); *Ic. bot.* t. 118 (*Anthemis*).—Coss. et Dur. *Expl. Alg. Bot.* t. 60 (*Anthemis*), 61 (*Ormenis*).—Sch. bip. *Flora* (1860), 433 (*Ormenis*).—Harv. and Sond. *Fl. cap.* iii. 154 (*Lidbeckia*), 155 (*Thaminophyllum*), 163.—A. Gray, *Man.* (ed. 1856), 225 (*Anthemis*).—Boiss. *Fl. or.* iii. 278 (*Anthemis*), 320 (*Ormenis*), 321 (*Anacyclus*), 323 (*Leucocyclus*), 325 (*Chamæmelum*).—Remy, *C. Gay Fl. chil.* iv. 238 (*Anthemis*).—Hook. f. *Fl. brit. Ind.* iii. 312 (*Anthemis*), 315.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 83 (*Cladanthus, Anacyclus*), 86 (*Anthemis*), 88 (*Ormenis*), 90 (*Perideræa*), 92 (*Matricaria*), 93 (*Chamæmelum*).—Gren. et Godr. *Fl. de Fr.* ii. 148; 150 (*Chamomilla*), 152; 155 (*Cota*), 157 (*Anacyclus*).—*Bot. Mag.* t. 462.—Walp. *Rep.* ii. 633 (*Anthemis*), 636; vi. 185 (*Anthemis*), 193; 207 (*Chamomilla*), 722 (*Anthemis*); *Ann.* i. 417 (*Anthemis*), 418 (*Maruta*), 420; ii. 884; v. 239 (*Anthemis*), 245.

[1] *Inst.* 491, t. 280.—L. *Gen.* n. 966.—DC. *Prodr.* vi. 63.—Endl. *Gen.* n. 2671.—Spach, *Suit. à Buffon*, x. 178.—Payer, *Fam. nat.* 24.—Sch. bip. *Tanac.* 15.—B. H. *Gen.* ii. 424, 1235, n. 529.—*Pinardia* Cass. *Dict. sc. nat.* xli. 38.—*Ismelia* Cass. *Dict.* xli. 40.—*Glebionis* Cass. *Dict.* xli. 41.—*Centrospermum* Spreng. *Syst.* iii. 862 (not K.).—*Heteranthemis* Schott, *Wien. Enr. Vaterl. Pfl.* (1818), ex *Isis* (1818), 822.—*Centrachæna* Schott, ex Less. *Syn.* 255.—*Myconia* Neck. *Elem.* i. 22 (ex Sch. bip.).—*Coleostephus* Cass. *Dict.* xli. 43.—*Brachanthemum* DC. *Prodr.* vi. 44.—*Preauxia* Sch. bip. *Webb Phyt. canar.* ii. 250.—*Monoptera* Sch. bip. *loc. cit.* 253.—*Argyranthemum* Sch. bip. *loc. cit.* 258, t. 90–96.—*Ismelia* Sch. bip. *loc. cit.* 271 (not Cass.).—*Stigmatotheca* Sch. bip. *loc. cit.* 255.—*Hymenostemma* Kze, *Flora* (1846), 699.—*Kremeria* Dur. *Rev. bot.* i. 364; *Expl. Alg. Bot.* t. 59.—*Glossopappus* Kze, *loc. cit.* 748.—*Ammanthus* Boiss. *Diagn. or.* xi. 18.—*Prolongoa* Boiss. *Voy. Esp.* 320, t. 92 *a.*—*Otospermum* Willk. *Bot. Zeit.* (1864), 251.—*Heteromera* Pom. *Nouv. mat. Fl. atl.* 60.

[2] Discal yellow; radial yellow white pink or variously purplish, lilac or fuscate.

[3] From which the type is scarcely generically distinct.

[4] Often odorous.

[5] Small or rather large.

[6] Sections of the genus are:

Pyrethrum Gærtn. *Fruct.* ii. 430, t. 169.—DC. *Prodr.* vi. 53.—Endl. *Gen.* n. 2679.—Maxim. *Bull. Acad. Pétersb.* xvii. *Mél. biol.* viii. 512.—*Plagius* L'Hér. *Diss.* ex DC. *Prodr.* vi. 135.—*Balsamita* Desf. *Act. Soc. d'hist. nat. Par.* i. t. 1.—*Phalacrodiscus* Less. *Syn.* 253.—*Leucanthemum* T. *Inst.* 492.—DC. *Prodr.* vi. 45.—Endl. *Gen.* n. 2667.—*Phalacrocarpum* Willk. *Bot. Zeit.* (1864), 252.—*Decaneurum* Sch. bip. *Tanac.* 44.—*Tridactylina* Sch. bip. *Tanac.* 48.—*Richteria* Kar. et Kir. *Bull.* (1842), 126.

Gymnocline Cass. *Dict.* xx. 119.—DC. vi. 58: radial flowers small (or sometimes 0); ligules flat open and shorter than style. (Sect. very closely connecting *Euchrysanthemum* with the following.)

Tanacetum T. *Inst.* 461, t. 261 (a prior name and perhaps to be preferred).—L. *Gen.* n. 944.—DC. *Prodr.* vi. 128; vii. 298.—Endl. *Gen.* n. 2696.—Sch. bip. *Tanac.* 46.—B. H. *Gen.* ii.

variously convex, very rarely conical, bare. (*Temp. and north reg. of both hemispheres.*[1])

392. **Cancrinia** Kar. and Kir.[2]—Flowers[3] 2-morphous (or by defect of the radial 1-morphous); the radial hermaphrodite or neutral; limb of ligulate corolla entire open; the discal hermaphrodite; limb of tubular corolla narrow-campanulate, 5-fid. Anthers obtuse or minutely auriculate at base. Style branches subpenicillate at truncate apex. Fruit oblong, 5-angled or compressed, papillose; pappus hairs or pales 5-∞, short rather rigid,[4] dilated at apex, entire, dentate or plumose-ciliate.—Perennial herbs, sometimes shrubby at base, oftener cæspitose; leaves alternate or basal, 3–5-dentate, pinnatifid or 3-nately or pinnately dissected; capitules[5] stipitate terminal solitary; bracts of hemi-

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434, n. 548.—*Psanacetum* Neck. *Elem.* i. 89.—*Hemipappus* C. Koch, *Linnæa*, xxiv. 340.—*Omalanthus* Less. *Syn.* 260 (not A. Juss.).—*Omalotes* DC. *Prodr.* vi. 83.—*Homalotes* Endl. *Gen.* n. 2686. — *Sphæromeria* Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 401: stem herbaceous or shrubby at base; leaves generally dissected; capitules rather large long-stipitate or oftener small copiously corymbiform-cymose; radial corollas tubular, dentate at regular or oblique apex; discal 5-dentate; fruit 5-gonal or the outermost 3-quetrous; pappus annular, cupuliform, auriculiform or sometimes 0.

Hippia L. *Mantiss.* 158.—Gærtn. *Fruct.* ii. 390, t. 164.—Endl. *Gen.* n. 2709.—B. H. *Gen.* ii. 434, n. 549: stem herbaceous or subshrubby; leaves pinnatisect or -fid; cymes of capitules corymbiform; flowers 2-morphous; radial corollas tubular, 3–4-dentate; fruit dorsally compressed, epappose; involucral bracts 2-seriate. (*S. Africa.*)

? *Schistostephium* Krebs, ex Less. *Syn.* 251.—DC. *Prodr.* vi. 74.—Endl. *Gen.* n. 2676.—B. H. *Gen.* ii. 432, n. 543: stem herbaceous or subshrubby; leaves dissected or incised; receptacle of cymose capitules more or less convex; flowers 2-morphous; radial corollas short tubular, 2-fid or 3–4-dentate; discal limb 4-dentate; radial fruit compressed; discal 4-angular. (*S. and trop. Africa.*)

[1] Spec. about 120. Jacq. *Obs.* t. 89–94; *Fragm.* t. 44; *Fl. austr.* t. 79.—W. *Hort. berol.* t. 33.—Vent. *Jard. Cels*, t. 43.—Desf. *Fl. atl.* t. 235–238.—Link, *Fl. portug.* t. 101, 102; 103, 104 (*Pyrethrum*).—Waldst. et Kit. *Pl. rar. hung.* t. 94, 236.—Vis. *St. dalm.* t. 8.—Labill. *Pl. syr. Dec.* iii. t. 8 (*Pyrethrum*).—Sibth. *Fl. græc.* t. 855 (*Tanacetum*), 877.—Ledeb. *Ic. Fl. ross.* t. 38 (*Tanacetum*), 84, 153, 369 (*Pyrethrum*), 494.—Hook. *Fl. bor.-amer.* t. 109.—Ten. *Fl. nap.* t. 80 (*Pyrethrum*).—Mor. *Fl. sard.* t. 83 (*Tanacetum*).—Reichb. *Ic. exot.* t. 36 (*Pyrethrum*); *Ic Fl. germ.* 986–995 (*Tanacetum*).—Jacquem. *Voy. Bot.* t. 97 (*Tanacetum*).—Sweet, *Brit. fl. Gard.* t. 193.—Bieb. *Cent. pl. ross.* t. 34, 78 (*Pyrethrum*).—Vis. *Fl. dalm.* ii. t. 8.—Webb, *Phyt. canar.* t. 110, 111 (*Pyrethrum*). — Andr. *Bot. Repos.* t. 109.—Trautv. *Middend. Reis. Bot.* t. 27 (*Tanacetum*).—Boiss. *Voy. Esp.* t. 92 (*Pyrethrum*); *Diagn. or.* ser. 2, iii. 28 (*Pyrethrum*), 30 (*Tanacetum*); *Fl. or.* iii. 334 (*Leucanthemum*), 335; 337 (*Pyrethrum*).—Fr. et Sav. *Enum. pl. jap.* i. 234 (*Pyrethrum*), 236.—Harv. and Sond. *Fl. cap.* iii. 161; 167 (*Tanacetum*), 168 (*Schistostephium*).—Remy, *C. Gay Fl. chil.* iii. 240 (*Pyrethrum*).—Griseb. *Fl. brit. W.-Ind.* 380 (*Pyrethrum*).—Miq. *Fl. ind.-bat.* ii. 84 (*Pyrethrum*); *Ann. Mus. lugd.-bat.* ii. 177 (*Tanacetum*).—Hook. f. *Fl. brit. Ind.* iii. 314; 318 (*Tanacetum*).—Willk. et Lge, *Prodr. Fl. hisp.* ii. 95 (*Leucanthemum*), 97 (*Pyrethrum*), 100 (*Tanacetum*), 103 (*Prolongoa*), 104.—Gren. et Godr. *Fl. de Fr.* ii. 137 (*Tanacetum*), 139 (*Plagius, Leucanthemum*), 146; 147 (*Pinardia*).—*Bot. Mag.* t. 327, 508, 1080; 1521 (*Pyrethrum*), 2042, 2556; 2706 (*Pyrethrum*), 5095, 5997, 6107.—Walp. *Rep.* ii. 636 (*Prolongoa, Pyrethrum*), 637; vi. 191 (*Leucanthemum, Phalacrodiscus*), 192 (*Decaneurum*), 193 (*Prolongoa*), 197 (*Preauxia*), 198 (*Monoptera*), 199 (*Argyranthemum*), 201 (*Ismelia*), 202 (*Pyrethrum*), 205 (*Myconia*), 206; 207 (*Xanthophthalmum*); *Ann.* i. 421; ii. 892 (*Pyrethrum*), 897 (*Tanacetum*); v. 247 (*Pyrethrum*).

[2] *Bull. Mosc.* (1842), 124.—B. H. *Gen.* ii. 424, n. 527.

[3] Yellow, or radial white, lilac or pink.

[4] Sometimes fuscate or reddish.

[5] Moderate or large.

spherical involucre imbricate, ∞-seriate, scarious or blackish at margin; the outer gradually smaller; receptacle nearly flat or more or less convex, bare.[1] (*Mid. temp. Asia.*[2])

393. **Peyrousea** DC.[3]—Flowers[4] hermaphrodite fertile, or the inner sometimes sterile, 1-morphous; limb of tubular corolla slightly expanded, 4-dentate. Anthers obtuse at base. Style branches obtuse or truncate at apex. Fruit oblong or obovate, thin subalate at margin, much compressed at back, without pappus.—An erect sericeous shrub; leaves alternate numerous lanceolate entire costate; capitules[5] terminal cymose few; bracts of broadly hemispherical involucre ∞, narrow acute sericeous, ∞-seriately imbricate; receptacle flat bare. (*S. Africa.*[6])

394? **Œdera** L.[7]—Flowers[8] 2-morphous, fertile or partly sterile capitellate; heads aggregately capitate; the radial female; limb of ligulate corolla linear-elongate open (or in inner flowers shorter and broader); the discal female; tube of regular corolla thin; limb scarcely or little expanded. Anthers entire or minutely dentate at base. Style branches of hermaphrodite flowers obtuse or truncate at apex. Fruit elongate, 4–5-angled; pales of cup-shaped or sometimes tubular pappus free or more or less connate.—Shrubs,[9] glabrous or variously clothed, sometimes long lanate; leaves opposite numerous, often short, coriaceous entire acute imbricate, often ciliolate; capitules sessile between uppermost leaves, solitary or few cymose; bracts of general involucre nearly like the stem leaves; bracts of single involucel ∞, imbricate, dry, scarious or paleaceous; receptacle of single heads loaded with linear pales between the flowers.[10] (*S. Africa.*[11])

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[1] Sect. of the genus is *Waldheimia* Kar. et Kir. *loc. cit.* 125.—B. H. *Gen.* ii. 424, n. 528.—*Allardia* Done, *Jacquem. Voy. Bot.* 87, t. 95, 96 (1844).—B. H. *Gen.* ii. 424, n. 528. A genus connecting the *Matricariceæ* with the *Senecioideæ*.

[2] Spec. 5, 6. Regl, *Act. H. petrop.* vi. (1880), 308 (*Waldheimia*).—Hook. f. *Fl. brit. Ind.* iii. 312 (*Allardia*).—Walp. *Rep.* ii. 637 (*Waldheimia*); vi. 178; 204, 254 (*Waldheimia*).

[3] *Prodr.* vi. 76.—B. H. *Gen.* ii. 432, n. 542.—*Lapeyrousia* Thunb. *Fl. cap. Præf.*; *Fl. cap.* 700 (not Pourr.).—Endl. *Gen.* n. 2681.

[4] Yellow.

[5] Rather large, shortly stipitate.

[6] Spec. 1. *P. calycina* DC.—Harv. and Sond. *Fl. cap.* iii. 176.—*P. oxylepis* DC.—*Osmites calycina* L.—*Cotula umbellata* L. f. *Suppl.* 378.—*Lapeyrousia calycina* Thunb.—*L. Thunbergii* Cass.—*Relhania calycina* Poir.

[7] *Mantiss.* 159 (not Crantz).—Lamk, *Ill.* t. 720.—Gærtn. *Fruct.* iii. 464.—Less. *Syn.* 247.—B. H. *Gen.* ii. 418, n. 512.—*Œderia* DC. *Prodr.* vi. 1.—Endl. *Gen.* n. 2635.

[8] Yellow, or the ligulate dorsally or entirely fuscate.

[9] Habit sometimes of the *Proteaceæ*.

[10] A genus in any place anomalous in the series chiefly from its inflorescence.

[11] Spec. about 4. Thunb. *Fl. cap.* 724.—L. f. *Suppl.* 391.—Harv. and Sond. *Fl. cap.* iii. 134.—*Bot. Mag.* t. 1637.

395. **Baileya** A. GRAY.[1]—Flowers[2] fertile, 2-morphous; the radial female, 1–3-seriate; tube of ligulate corolla very short open or 0; limb open broad, entire, 3-dentate or obtusely and shortly 3-lobed; the discal hermaphrodite; limb of tubular corolla little expanded, 5-dentate. Anthers obtuse or minutely auriculate at base. Style branches of hermaphrodite flowers penicillate at truncate apex. Fruit oblong, sometimes 4-angled; angles papillose, or ∞-striate, callose at base, truncate at apex, without pappus.—Branching herbs,[3] sometimes subshrubby at base, lanate; leaves alternate entire or variously lobed or dissected; capitules[4] terminal stipitate, oftener solitary; bracts of subhemispherical involucre unequal lanate few-seriate; receptacle convex bare.[5] (*Mexico.*[6])

396. **Santolina** T.[7]—Flowers[8] 1–2-morphous; the radial female fertile or neutral, sometimes 0; limb of ligulate corolla open or suberect, oftener short rather broad, 3-dentate, sometimes shortened or difformed; the discal hermaphrodite; tube of regular corolla cylindrical, compressed or decurrent at base more or less broadly appendiculate; limb little expanded or narrow-campanulate, 5-fid or dentate. Anthers obtuse at base, in radial flowers sometimes thick, rudimentary or 0. Style branches of hermaphrodite flowers penicillate at truncate apex; of female thinner recurved. Fruit 2–5-angled or dorsally compressed; angles rather prominent, sometimes subcartilaginous; pappus 0.—Herbs or undershrubs;[9] leaves alternate, serrulate, incised, pinnatifid or once or many times pinnatisect; capitules[10] long stipitate, solitary or few loosely cymose or oftener ∞, in corymbiform cymes; involucre subglobular, ovoid, campanulate or subhemispherical; bracts ∞, imbricate appressed, dry or concoloured or blackish at scarious margin, many-seriate; the outer gradually smaller;[11] receptacle variously convex or elongate and loaded with

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[1] *Pl. Fendler.* 105.—B. H. *Gen.* ii. 423, n. 526.

[2] Yellow.

[3] Habit and odour of *Chrysanthemum.*

[4] Rather large or moderate.

[5] A genus resembling the *Helenieæ*, sometimes compared with *Riddellia* and *Whitneya* (A. GRAY, *Proc. Amer. Acad.* ix. 195), apparently not far removed from *Matricarieæ*. *B. pauciradiata* is said to be biennial.

[6] Spec. 3. TORR. *Emor. Rep. Bot. App.* t. 6.—WALP. *Ann.* ii. 893.

[7] *Inst.* 460, t. 260.—L. *Gen.* n. 942.—GÆRTN. *Fruct.* ii. 398.—DC. *Prodr.* vi. 35; vii. 296.—ENDL. *Gen.* n. 2651.—B. H. *Gen.* ii. 420, n. 517.

[8] Yellow or yellowish; radial often white or more rarely pink.

[9] Often strongly odorous.

[10] Moderate or oftener small.

[11] Sect. of the genus with us as with a few botanists is (REICHB. *Ic. Fl. germ.* t. 1012), *Achillea* L. *Gen.* n. 971.—J. *Gen.* 186.—NECK. *Elem.* i. n. 25.—DC. *Prodr.* vi. 24; vii. 295.—ENDL. *Gen.* n. 2649.—B. H. *Gen.* ii. 419, n. 516.—*Millefolium* T. *Inst.* 460, t. 260.—*Ptarmica* T. *Inst.* 496, t. 283.—NECK. *Elem.* i. 15.—DC. *Prodr.* vi. 19; vii. 295.—ENDL. *Gen.*

pales subtending or half enclosing the flowers. (*N. hemisph. of Old and New World.*[1])

397. **Athanasia** L.[2]—Flowers[3] 1–2-morphous; the radial female fertile, 1-seriate or 0; limb of ligulate corolla open or erect, entire or few-dentate; the discal hermaphrodite fertile; corolla tubular, sometimes decurrent or appendiculate at base; limb more or less expanded or campanulate, 5-fid. Anthers obtuse or minutely dentate at base. Style branches of hermaphrodite flowers truncate, often penicillate, or more rarely style undivided. Fruit angular, 4–5-costate or narrowly alate, sometimes dorsally compressed; pappus pales or paleoles ∞, sometimes continuous with angles, or narrow entire pointed, or more or less connate, setaceously lacerate or thickly piliform and sometimes articulate, or more rarely 0.—Shrubs or shrublets, glabrous or variously clothed, often with scattered resinous-oily glandules and hence odoriferous, or more rarely perennial or annual herbs; leaves alternate or rarely opposite or fasciculate, small or crowded, entire, dentate, incised, 1–2–3-pinnatisect; capitules[4] solitary or in racemiform or umbelliform cymes;[5] involucre ovoid, oblong, campanulate, subglobular or subhemispherical; bracts 2–∞-seriate, sometimes reflexed, dry, with herbaceous appendage or variously clothed; the outer often gradually shorter; receptacle flat or

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n. 2648: stem oftener herbaceous; capitules oftener corymbiform-cymose; flowers oftener 2-morphous; fruit generally compressed and narrowly marginate.

[1] Spec. about 70. Jacq. *Fl. austr.* t. 76, 77 (*Achillea*), *App.* t. 30 (*Anthemis*), 33.—Jacq. f. *Ecl.* t. 4, 88 (*Achillea*).—Waldst. et Kit. *Pl. rar. hung.* t. 2, 34, 66, 80 (*Achillæa*).—Ten. *Fl. nap.* t. 81 (*Anthemis*), 83, 195 (*Achillea*).—Vent. *Jard. Cels*, t. 54, 95 (*Achillea*).—Guss. *Pl. rar. sic.* t. 58.—Sm. *Exot. Bot.* t. 62.—Sibth. *Fl. græc.* t. 851; 888 (*Anthemis*), 891–897 (*Achillea*).—Vis. *Fl. dalm.* t. 9 (*Achillea*).—Kotsch. *Pl. arab.* t. 1 (*Achillea*).—Boiss. *Voy. Esp.* t. 93; *Diagn. or.* ser. 2, iii. 18; *Fl. or.* iii. 253 (*Achillea*).—Reichb. *Ic. Fl. germ.* t. 1013–1028 (*Achillea*); *Icon. bot.* t. 274, 311, 459 (*Achillea*).—A. Gray, *Man.* (ed. 1856), 225 (*Achillea*).—Fr. et Sav. *Enum. pl. jap.* i. 233 (*Achillea*).—Miq. *Fl. ind.-bat.* ii. 84 (*Achillea*).—Hook. f. *Fl. brit. Ind.* iii. 311 (*Achillea*).—Willk. et Lge, *Prodr. Fl. hisp.* ii. 76 (*Achillea*), 80.—Gren. et Godr. *Fl. de Fr.* ii. 160; 161 (*Achillea*).—*Bot. Mag.* t. 498, 1287 (*Achillea*).—Walp. *Rep.* ii. 634, 991; vi. 190; *Ann.* i. 419; ii. 888; v. 242 (*Achillea*).

[2] *Gen.* n. 943.—J. *Gen.* 185 (part.).—Cass. *Dict.* xxii. 315; xxvii. 168; xxix. 179.—Less. *Syn.* 262.—DC. *Prodr.* vi. 86.—Endl. *Gen.* n. 2691.—B. H. *Gen.* ii. 416, n. 509.—*Hymenolepis* Cass. *Dict.* xxii. 315.—*Metagnanthus* Endl. *Gen.* n. 2689.—*Morysia* Cass. *Dict.* xxxiii. 59.—DC. *Prodr.* vi. 90.—*Saint-Morysia* Endl. *Gen.* n. 2692.—*Holophyllum* Less. *Syn.* 262.—DC. *Prodr.* vi. 86.—Endl. *Gen.* n. 2690.—*Pristocarpha* E. Mey. herb. *Dreg.*—*Bembycodium* Kze, *Linnæa*, xvi. 316.

[3] Yellow, or radial white or violet.

[4] Rather small or more rarely moderate.

[5] Sections of the genus are:

Lasiospermum Lag. *Elench. H. matr.* 31 (not Fisch., nor Rafin.).—DC. *Prodr.* vi. 37.—Endl. *Gen.* n. 2653.—B. H. *Gen.* ii. 416, n. 508.—*Mataxa* Spreng. *Syst. Cur. post.* 297.—*Lanipila* Burch. *Trav.* i. 259: stem herbaceous glabrous; bracts of short involucre few-seriate; flowers fertile, 1–2-morphous; fruit densely lanate. (*S. Africa.*)

Eriocephalus L. *Gen.* n. 994 (not Vaill.).—Lamk, *Ill.* t. 717.—Gærtn. *Fruct.* ii. 428.—DC. *Prodr.* vi. 145.—Endl. *Gen.* n. 2710.—B. H. *Gen.* ii. 416, n. 507: stem shrubby branched;

convex and loaded with various pales between the flowers. (*S. and N. W. subtrop. ins. Africa, Medit. reg.*[1])

398? **Gymnopentzia** Benth.[2]—"Flowers hermaphrodite fertile, 1-morphous; limb of regular tubular corolla[3] little expanded, 5-fid. Anthers entire at base. Style branches penicillate at truncate apex. Fruit[4] subterete, 12–15-costate, without pappus. —A glabrous or sparsely reflexed-pubescent shrub;[5] branches virgate fastigiate; leaves opposite, often fasciculate, linear, generally bifurcate; capitules (rather small) closely corymbiform-cymose; bracts of rather broadly campanulate involucre dry narrow appressed imbricate few-seriate, subscarious-margined at

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leaves alternate or subopposite, oftener small fasciculate; involucral bracts 2-seriate; inner connate and densely lanate; flowers 1–2-morphous; discal sterile; style undivided; fruit epappose, glabrous or villosulose. (*S. Africa.*)

Diotis Desf. *Fl. atl.* ii. 261 (not Schreb.).—Cass. *Dict.* xiii. 295.—DC. *Prodr.* vi. 34.—Endl. *Gen.* n. 2650.—B. H. *Gen.* ii. 420, n. 518.—*Otanthus* Link, *Fl. port.* ii. 364: stem herbaceous; leaves alternate sessile thick densely hoary-lanate; flowers 1-morphous; corolla tube appendiculately produced at base above ovary; fruit 4–5-gonal. (*N. W. Africa, Medit. reg.*)

Gonospermum Less. *Syn.* 263.—DC. *Prodr.* vi. 84.—Endl. *Gen.* n. 2688.—B. H. *Gen.* ii. 417, n. 510.—*Hymenolepis* Sch. Bip. *Webb Phyt. canar.* ii. 293: stem shrubby, often rather viscid; leaves alternate; involucral bracts dry ∞-seriate; flowers 1–2-morphous; fruit 4–5-costate; ribs produced at apex in short or dentiform pales. (*Canary Is.*)

Adenosolen DC. *Prodr.* vi. 136.—Endl. *Gen.* n. 2698.—*Marasmodes* DC. *Prodr.* vi. 136.—Endl. *Gen.* n. 2699.—B. H. *Gen.* ii. 432, n. 544.—? *Brachymeris* DC. *Prodr.* vi. 76.—*Oligodorella* Turcz. *Bull. Mosc.* (1851), i. 187: stem shrubby; leaves entire linear or minute; capitules solitary or cymose few; flowers 1-morphous; corolla 5-dentate or 5-fid; fruit 4–5-gonal; pappus paleaceous or 0; receptacle bare. (*S. Africa.*)

Stilpnophytum Less. *Syn.* 264.—DC. *Prodr.* vi. 92.—Endl. *Gen.* n. 2693.—B. H. *Gen.* ii. 433, n. 545: stem shrubby; leaves alternate, oblong or linear; capitules corymbiform-cymose; flowers 1-morphous; corolla regular, 5-fid; fruit 4–5-gonal, epappose; inner vacuous. (*S. Africa.*)

Pentzia Thunb. *Prodr. Fl. cap.* 145.—Less. *Syn.* 266.—DC. *Prodr.* vi. 136.—Endl. *Gen.* n. 2700.—B. H. *Gen.* ii. 433, n. 547: stem shrubby; leaves alternate, cuneate, dentate or incised (canescent); capitules solitary or corymbiform-cymose; flowers 1-morphous; fruit 5-gonal; pappus cupular often more or less divided or auriculiform, sometimes 0. (*S. Africa.*)—Sect. connecting the genus with *Tanacetum*.

? *Asæmia* Harv. *Fl. cap.* iii. 186 (*Stilpnophyti* sect.).—B. H. *Gen.* ii. 433, n. 546: stem shrubby much branched; leaves opposite small entire; capitules sessile between the lateral fascicles of leaves solitary; flowers 1-morphous; fruit distantly 3–4-costate; pappus 0. (*S. Africa.*)

? *Lonas* Adans. *Fam. des pl.* ii. 118.—Gærtn. *Fruct.* ii. 396, t. 165.—Less. *Syn.* 263.—DC. *Prodr.* vi. 84.—Endl. *Gen.* n. 2687.—B. H. *Gen.* ii. 417, n. 511: stem herbaceous annual; leaves alternate, dentate or incised; capitules corymbiform-cymose; flowers 1-morphous; fruit 5-costate; pappus cyathiform, dentate or lacerate, transparent. (*Medit. reg.*)—Sect. connecting genus with *Chrysanthemum*.

Lugoa DC. *Prodr.* vi. 84.—Endl. *Gen.* n. 2641.—Sch. Bip. *Webb. Phyt. canar.* ii. 292, t. 88: stem subshrubby; leaves alternate pinnatilobed; capitules corymbiform-cymose (rather large); teeth of submembranous pappus continuous with angles of fruit. (*Canary Is.*)—Sect. connecting genus with *Tanacetum*.

[1] Spec. about 80. Jacq. *Coll.* t. 11 (*Eriocephalus*); *H. schœnbr.* t. 148 (*Athanasia*).—L'Hér. *Sert. angl.* t. 27 (*Tanacetum*).—Sibth. *Fl. græc.* t. 850 (*Santolina*).—Webb, *Phyt. canar.* t. 97–99 (*Gonospermum*).—Harv. and Sond. *Fl. cap.* iii. 153 (*Lasiospermum*), 168 (*Schistostephium*), 171 (*Pentzia*), 175 (*Marasmodes, Adenosolen*), 186 (*Stilpnophytum*), 187; 199 (*Eriocephalus*).—Reichb. *Ic. Fl. germ.* t. 998 (*Diotis*).—Walp. *Ann.* v. 244 (*Diotis*).

[2] *Gen.* ii. 537, n. 546 *a*.

[3] Externally papillosely puberulous.

[4] Puberulous; exterior slightly curved.

[5] Habit of *Athanasia*.

apex; the outer gradually shorter; receptacle flat or rather convex bare." (*S. Africa.*[1])

399. **Lepidostephium** Oliv.[2]—"Flowers[3] fertile, 2-morphous; the radial female, 1-seriate; limb of ligulate corolla open, 3-dentate; the discal hermaphrodite; limb of tubular corolla elongate cylindrical, shortly 5-fid at apex. Anthers entire at base. Style branches of hermaphrodite flowers linear, slightly flattened, papillose at truncate apex. Fruit (immature) subterete glandularly hispid; pappus pales free or subconnate unequally incised short, 1-seriate.—A perennial herb, glabrescent glandularly scabrous or loosely hoary tomentose; stem erect subsimple; leaves alternate decurrent, entire or sinuate-dentate; capitules[4] loosely corymbiform-cymose few; bracts of broadly campanulate or subhemispherical involucre ∞, narrow carinate, ∞-seriately imbricate; the outer gradually smaller; receptacle flat foveolate glandular-fringed." (*S. Africa.*[5])

400. **Phymaspermum** Less.[6]—Flowers[7] all fertile (or the inmost sterile), 2-morphous, or sometimes by defect of the radial, 1-morphous; the radial female; limb of ligulate corolla open entire; the discal hermaphrodite; limb of tubular corolla campanulate, 5-fid. Anthers entire at base. Style branches of hermaphrodite flowers truncate. Fruit oblong narrow, terete, or the outermost compressed, 8–10-costate; ribs sometimes produced in small teeth beyond the fruit.—Low glabrous shrubs or undershrubs; leaves alternate linear rigid, entire or 3-fid; capitules[8] solitary terminal in loose corymbiform cymes; bracts of hemispherical or campanulate involucre dry, imbricate few-seriate; the outer shorter; the inner scarious at margin; receptacle flat or convex bare. (*S. Africa.*[9])

401. **Soliva** R. and Pav.[10]—Flowers 2-morphous; the outermost female fertile, 1-seriate; corolla thinly tubular shorter than style, 2–4-dentate or very small or oftener 0; the discal

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[1] Spec. 1. *G. bifurcata* Benth.

[2] *Hook. Icon.* xi. 22, t. 1030.—B. H. *Gen.* ii. 422, n. 522.

[3] "Purplish from dry specimens."

[4] Moderate.

[5] Spec. 1. *L. denticulatum* Oliv.

[6] *Syn.* 253.—DC. *Prodr.* vi. 44.—Endl. *Gen.* n. 2663.—B. H. *Gen.* ii. 422, n. 523.—*Oligoglossa* DC. *Prodr.* vi. 76.—*Jacosta* E. Mey. herb.—Endl. *Gen.* n. 2680.—*Iocaste* E. Mey. ex Harv. and Sond. *Fl. cap.* iii. 160.

[7] Yellow or reddish.

[8] Moderate or small.

[9] Spec. 3, 4. Harv. and Sond. *loc. cit.* 160, 161 (*Iocaste*, *Phymaspermum*, *Adenachæna*).

[10] *Prodr. Fl. per.* 113, t. 24.—R. Br. *Trans. Linn. Soc.* xii. 101.—Less. *Syn.* 268.—DC. *Prodr.* vi. 142.—Endl. *Gen.* n. 2708.—B. H. *Gen.* ii. 430, n. 537.—*Gymnostyles* J. *Ann. Mus.* iv. 260, t. 61.—Pers. *Syn.* ii. 497.—*Solivæa* Cass. *Dict.* xxix. 177.

hermaphrodite, fertile or oftener sterile; limb of regular tubular corolla 4-dentate, or more rarely 2–3-dentate or fid. Anthers obtuse or very shortly auriculate at base. Style branches of hermaphrodite flowers short or just perceptibly dentiform, or oftener style entire and finally hard-spinescent. Discal fruit oftener thin and vacuous; the radial dorsally compressed or obtusely 4-angled, truncate at apex, sometimes marginate or rigidly alate, 2–4-mucronate at apex, dentate or shortly aristate or more rarely calvous.—Low prostrate or densely cæspitose herbs; leaves alternate, or thinly dissected, or crowded linear densely imbricate, entire rigid or rather fleshy; capitules[1] sessile between the leaves, solitary crowded or corymbiform-glomerate; bracts of hemispherical or subcampanulate involucre few, 2–3-seriate, often scarious at margin, subequal, or the outer few (1–3) subherbaceous larger; receptacle flat or slightly convex bare sometimes subglobular.[2] (*Extratrop. and antarct. S. America, N.-Zealand, Australia, the Carolines, Lusitania.*[3])

402? **Ceratogyne** Turcz.[4]—"Flowers[5] 2-morphous; the radial female fertile few (3–6); limb of subligulate corolla concave or flat small, 2–3-dentate; the discal as many hermaphrodite sterile; limb of tubular corolla expanded, 3–4-dentate. Anthers obtuse entire at base. Style branches of hermaphrodite flowers short hairy. Radial fruit[6] dorsally much compressed flat obovate truncate without pappus, afterwards much enlarged cuneate; margins involute herbaceously dilated and produced in 2 incurved auricles; the discal thin and vacuous.—A diminutive many-stemmed (canescent) herb; leaves basal rosulate obovately spathulate; the cauline alternate few and small; capitules[7] subsessile in upper axils or at ends of branches; bracts of ovoid involucre few subequal oblong, herbaceous subscarious; receptacle small bare within ray." (*West. extratrop. Australia.*[1])

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[1] Small or minute.

[2] A sect. of the genus (a mountain form) appears to be *Abrotanella* Cass. *Dict.* xxxvi. 27; *Op. phyt.* ii. 42.—DC. *Prodr.* vi. 141.—Endl. *Gen.* n. 2705.—*Scleroleima* Hook. f. *Hook. Lond. Journ.* v. 144, t. 14.—*Trineuron* Hook. f. *Fl. antarct.* i. 23, t. 17.—*Ceratella* Hook. f. *loc. cit.* 25, t. 18: stem cæspitose or ascending short; leaves crowded, linear or narrow entire; capitules solitary or glomerulate; corolla of female flowers thin or very small. (*Australia, N.-Zealand, antarct. Amer.*)

[3] Spec. about 15. Gaudich. *Ann. sc. nat.* sér. 1, v. 104, t. 3, fig. 4 (*Oligosporus*).—Bot. *uit.* t. 73 (*Hippia*).—Benth. *Fl. austral.* iii. 552; 553 (*Abrotanella*).—Remy, *C. Gay Fl. chil.* iii. 247 (*Abrotanella*), 252.—Hook. f. *Handb. N.-Zeal. Fl.* 139 (*Abrotanella*).—F. Muell. *Pl. Vict.* t. 40 (*Trineuron*).—A. Gray, *Proc. Amer. Acad.* v. 137 (*Abrotanella*).—Phil. *Linnæa*, xxix. 6; xxxiii. 168.—Walp. *Rep.* ii. 643, 992; vi. 226 (*Trineuron*), 227 (*Ceratella, Scleroleima*).

[4] *Bull. Mosc.* (1851), ii. 68.—B. H. *Gen.* ii. 431, n. 539.—A. Gray, *Hook. Kew Journ.* iv. 275.

[5] Very small.

[6] Villosulous within and to the dorsal costa.

[7] Small.

403. **Cotula** T.[2]—Flowers[3] oftener 4-merous (more rarely 3–5-merous) generally all fertile; the discal hermaphrodite or more rarely sterile; the radial female, 1–few-seriate (often absent); corolla ligulate or unequally 4-lobed sub-2-labiate. Corolla of discal flowers regular; tube sometimes 2-alate; lobes of limb oftener 4, valvate. Stamens generally 4; anthers apiculate, entire or rather obtuse at base. Ovary crowned with small disk; branches of style (often undivided in sterile flowers) obtuse or truncate at apex. Fruit without pappus or more rarely auriculately pappose within, more or less dorsally compressed, often stipitate, nerveless or 2–4-nervate.—Low annual or more rarely perennial herbs, sometimes creeping or cæspitose, glabrous or variously villose; leaves alternate pinnatisect or pinnatifid, sometimes entire or dentate; capitules stipitate; peduncle shortly conical at apex or turbinate obconical and broadly hollowed (*Cenia*[4]); receptacle flat or slightly convex bare,[5] bracts of cupular, hemispherical or

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[1] Spec. 1. *C. obionoides* Turcz.—Benth. *Fl. austral.* iii. 555.—*Diotosperma Drummondii* A. Gray.

[2] *Inst.* 495, t. 282.—Vaill. *Act. Acad. par.* (1719), 288.—L. *Gen.* n. 968.—Gærtn. *Fruct.* ii. 388, t. 165.—Lamk, *Ill.* t. 700.—DC. *Prodr.* vi. 77.—Endl. *Gen.* n. 2683.—B. H. *Gen.* ii. 428, 1235, n. 533.—? *Baldingeria* Neck. *Elem.* i. 88 (ex B. H.).—*Leptinella* Cass. *Bull. Soc. philom.* (1822), 127; *Dict.* xxvi. 66.—DC. *Prodr.* vi. 141.—Endl. *Gen.* n. 2706.—*Strongylosperma* Less. *Syn.* 261.—*Pleiogyne* C. Koch, *Bot. Zeit.* (1843), 40.—*Ctenosperma* Hook. f. *Hook. Lond. Journ.* vi. 115.—*Gymnogyne* Steetz, *Pl. Preiss.* i. 431.—*Chlamydophora* Ehrenb. *Less. Syn.* 265.—DC. *Prodr.* vi. 138.—Endl. *Gen.* n. 2701.—*Otoglyphis* Pom. *N. mat. Fl. atl.* 56.—*Machlis* DC. *Prodr.* vi. 140.—Deless. *Ic. sel.* iv. t. 50.—Endl. *Gen.* n. 2704.—*Brocchia* Vis. *Fl. æg. et nub.* 35.—*Cœnocline* C. Koch, *Bot. Zeit.* (1843), 41.—*Symphyomera* Hook. f. *Hook. Lond. Journ.* vi. 116.

[3] Yellow or radial white.

[4] Commers. ex J. *Gen.* 183.—Cass. *Dict.* vii. 367; xxvi. 283.—DC. *Prodr.* vi. 82.—Endl. *Gen.* n. 2685.—B. H. *Gen.* ii. 429, n. 534.—*Lancisia* Gærtn. *Fruct.* ii. 422 (not Lamk).

[5] Sections of the genus are:

Otochlamys DC. *Prodr.* vi. 77.—Endl. *Gen.* n. 2682.—B. H. *Gen.* ii. 428, n. 532: stem annual; leaves opposite, entire or pinnatisect; involucre duplex; flowers 2-morphous; corolla tube of hermaphrodite flowers transparent-marginate and unequally appendiculate at base; fruit variously stipitate. (*S. Africa.*)

Centipeda Lour. *Fl. cochinch.* 492 (not Less.).—B. H. *Gen.* ii. 430, n. 535.—*Myriogyne* Less. *Linnæa*, vi. 219.—DC. *Prodr.* vi. 139.—Endl. *Gen.* n. 2702.—*Sphæromorphæa* DC. *Prodr.* vi. 140.—Deless. *Ic. sel.* iv. t. 49.—Endl. *Gen.* n. 2703: capitules shortly racemose, spicate or laterally sessile to branches; radial corollas 2, 3-fid; discal 4-dentate; fruit not compressed, obtusely 3–5-costate. (*S.E. Asia, Australia, extratrop. S. Amer.*)

Plagiocheilus Arn. ex DC. *Prodr.* vi. 142.—Endl. *Gen.* n. 2707.—B. H. *Gen.* ii. 430, n. 536.—*Hippia* H. B. K. *Nov. gen. et spec.* iv. 301 (not L.).—? *Polygyne* Phil. *Linnæa*, xxxiii. 170 (ex B. H.): stem herbaceous, sometimes erect rather large; capitules stipitate; hermaphrodite flowers sterile; corolla 4-dentate; corolla of female flowers unequally 2–3-fid: fruit laterally compressed. (*Extratrop. And. S. Amer.*)

Nananthea DC. *Prodr.* vi. 45.—Deless. *Ic. sel.* iv. t. 45.—Endl. *Gen.* n. 2666.—B. H. *Gen.* ii. 428, n. 531: stem dwarf; leaves pinnatifid rather fleshy; flowers 2-morphous; radial ligules short, erect or patent entire; discal corollas 4-dentate; fruit epappose ∞-striate. (*Corsica.*)

Isoetopsis Turcz. *Bull. Mosc.* (1851), i. 174, t. 3.—B. H. *Gen.* ii. 432, n. 541: stem dwarf herbaceous; leaves basal linear (grass-like);

subcampanulate involucre 1–2-seriate; outer flowers and fruit often pedicellate.[1] (*All warm reg.*)

404. **Artemisia** T.[2]—Flowers[3] 1–2-morphous; the outermost female fertile, 1-seriate or 0; corolla thin tubular, shorter and oftener unequally-2–3-fid at apex; the discal hermaphrodite fertile or sterile; tube of regular corolla sometimes thickened at base; limb campanulate or scarcely expanded, 5-fid or dentate. Anthers entire at obtuse base. Style branches of hermaphrodite flowers, not or more or less thickened at apex, penicillate or obtuse, sometimes very short or scarcely or not at all distinct. Fruit oblong or obovoid, subterete, 2–5-costate or ∞-striate, sometimes obscurely alate, straight or incurved, obtuse or truncate at apex; pappus disk-like, or annular or shortly coroniform or paleaceous or lacerate, sometimes 0.—Herbs or undershrubs or rarely shrubs[4] generally canescent; leaves alternate, entire or incised, 2–3-fid, 1–2–3-pinnately dissected; capitules[5] stipitate, erect or oftener pendulous, in simple or compound racemes or in more or less branched glomerules; bracts of subglobular, ovoid or broadly campanulate involucre few-seriately imbricate, oftener scarious at margin; the outer generally tomentose and gradually smaller; receptacle flat, more or less convex or hemispherical, bare or hirsute and fringed between the flowers.[6] (*All warm and temp. reg., esp. of N. hemisphere.*[7])

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capitules densely aggregated to collum; fruit subturbinate sericeous; style of hermaphrodite flowers undivided; pappus pales ∞, obtuse. (*Australia.*)—Sect. anomalous in style and leaves.

Elachanthus F. Muell. *Linnæa*, xxv. 410.—B. H. *Gen.* ii. 431, n. 540: stem very small herbaceous; leaves alternate linear entire; capitules (small) terminal; style undivided or 2-branched; fruit obconical sericeous; pappus pales ∞, lanceolate. (*Australia.*)—Sect. like the preceding anomalous in style and leaves.

[1] Spec. about 50, Sibth. *Fl. græc.* t. 878, 879.—Del. *Fl. eg.* t. 47, fig. 1 (*Balsamita*).—Pœpp. et Endl. *Nov. gen. et spec.* iii. t. 248 (*Plagiocheilus*).—Hook. *Icon.* t. 335.—F. Muell. *Pl. Victor.* t. 41 (*Myriogyne*).—Wedd. *Chl. andin.* 60, 227, t. 14 (*Plagiocheilus*).—Reichb. *Ic. Fl. germ.* t. 998.—Hook. f. *Fl. tasm.* t. 50; 51, 52 (*Leptinella*); *Fl. antarct.* t. 19, 20 (*Leptinella*).—Benth. *Fl. austral.* iii. 547; 552 (*Myriogyne*), 555 (*Elachanthus*), 556 (*Isoetopsis*).—Harv. and Sond. *Fl. cap.* iii. 177; 184 (*Cenia*).—Oliv. and Hiern, *Fl. trop. Afr.* iii. 397.—Remy, *C. Gay Fl. chil.* iv. 245 (*Myriogyne*), 248 (*Leptinella*), 250 (*Plagiocheilus*).—Hook. f. *Handb. N.-Zeal. Fl.* 140; *Fl. brit. Ind.* iii. 316; 317 (*Centipeda*).—Willk. et Lge, *Prodr. Fl. hisp.* ii. 91.—Gren. et Godr. *Fl. de Fr.* ii. 148 (*Nananthea*).—Walp. *Rep.* ii. 638; 643 (*Leptinella, Plagiocheilus*), 991; vi. 226 (*Plagiocheilus*); *Ann.* ii. 895; v. 249.

[2] *Inst.* 460, t. 260.—L. *Gen.* n. 945.—Adans. *Fam. des pl.* ii. 120.—J. *Gen.* 184.—Lamk, *Dict.* i. 260; *Suppl.* i. 459.—DC. *Prodr.* vi. 93; vii. 298.—Endl. *Gen.* n. 2694.—Spach, *Suit. à Buffon*, x. 167.—B. H. *Gen.* ii. 435, n. 551.—*Absinthium* Gærtn. *Fruct.* ii. 293, t. 164.—Spach, *loc. cit.* 171.—*Oligosporus* Cass. *Bull. Soc. philom.* (1817); *Dict.* xxxvi. 24.—*Picrothamnus* Nutt. *Trans. Amer. Phil. Soc.* ser. 2, vii. 417.

[3] Pale yellow or whitish.

[4] Often highly odorous.

[5] Small or minute.

[6] Sect. connecting the genus with *Tanacetum* is *Crossostephium* Less. *Linnæa*, vi. 220; *Syn.* 266.—DC. *Prodr.* vi. 127.—Endl. *Gen.* n. 2695.—B. H. *Gen.* ii. 434, 1235, n. 550: stem shrubby at base; fruit 5-gonal; pappus short coroniform or lacerate-paleaceous. (*Sea shores of China.*)

[7] Spec. about 140. Jacq. *Fl. austr.* t. 99, 100;

VIII.—AMBROSIEÆ.

405. **Ambrosia** T.—Flowers monœcious; capitules 1-sexual. Corolla of male flower regular tubular; limb scarcely expanded generally more or less broadly campanulate, 5-dentate. Stamens 5, inserted in corolla; anthers free introrse, obtuse at base, surmounted at apex by connective produced or enlarged by an inflexed setule. Style of rudimentary ovary thin, papillosely penicillate at capitate apex. Female flowers without perianth; ovary 1-celled; ovule 1, suberect; style branches 2, exserted from involucre, free or more or less connate; one sometimes smaller or 0. Fruit dry, indehiscent, 1-spermous; embryo fleshy exalbuminous.—Annual or perennial herbs, sometimes shrubby at base, canescent or rarely glabrous; leaves alternate or opposite, entire, dentate, lobed, incised or 1–2–3-pinnately dissected or pinnatipartite; male capitules sessile or stipitate and in more or less compound branched and cymiferous racemes or spikes, often nutant, ∞-flowered; bracts of broadly hemispherical involucre 4–∞, more or less deeply connate herbaceous; receptacle small variously paleaceous between the flowers; female capitules intermixed with males or the lower oftener axillar, solitary or glomerulate, either 1-flowered (*Euambrosia*, *Hymenoclea*), or more rarely (*Franseria*) 1–4-flowered; involucre sometimes sacciform, ovoid, obovoid or globular, often attenuate above and surrounding the styles; apical mouth entire or dentate and pervious to style, below apex 4–8-tuberculate in a simple series or aculeate (*Euambrosia*), or ∞-seriately aculeate, 1–4-rostrate, and 1–4-celled within (*Franseria*), or sometimes with an appendage of 9–12 radiately open generally unequal and scarious scales (*Hymenoclea*), 1-celled. (*All warm and temp. reg.*)—*See p.* 64.

App. t. 34, 35; *Ic. rar.* t. 172; *H. schœnbr.* t. 467.—Lhér. *Sert. angl.* t. 28.—Sibth. *Fl. græc.* t. 856.—Waldst. et Kit. *Pl. rar. hung.* t. 65, 75.—Vis. *Fl. dalm.* t. 9.—Ten. *Fl. nap.* t. 190, 192, 195, 248.—Ledeb. *Ic. Fl. ross.* t. 452, 458, 459, 462, 463, 465–467, 469–475, 478, 488.—Del. *Fl. eg.* t. 43.—Wight, *Icon.* t. 1111, 1112.—Jacquem. *Voy. Bot.* t. 100.—Bess. *Mém. Mosc.* ix. t. 1–5.—Torr. *Whippl. Exp. Bot.* 54; *Marc. Exp. Bot.* t. 12.—Torr. et Gray, *Fl. bor.-amer.* ii. 415.—A. Gray, *Proc. Amer. Acad.* vi. 551; vii. 361; *Proc. Acad. Phil.* (1863), 66.—Chapm. *Fl. S. Unit. St.* 242.—Eat. *Fort. parall. Exp. Bot.* 180, 189, t. 19.—Seem. *Her. Bot.* t. 6.—Remy, *C. Gay Fl. chil.* iv. 243.—Phil. *Fl. atacam.* 33.—Fr. et Sav. *Enum. pl. jap.* i. 237.—Boiss. *Voy. Esp.* t. 94, 94 *a*, 95; *Diagn. or.* ser. 2, iii. 31; *Fl. or.* iii. 360.—Miq. *Fl. ind.-bat.* ii. 86; *Ann. Mus. lugd.-bat.* ii. 175.—Webb, *Phyt. canar.* t. 100–102.—Batk. *Nov. Act. nat. Cur.* xiii. t. 43.—Harv. and Sond. *Fl. cap.* iii. 169.—Oliv. and Hiern, *Fl. trop. Afr.* iii. 400.—Hook. f. *Fl. brit. Ind.* iii. 321.—Reichb. *Ic. Fl. germ.* t. 1029–1041; *Icon. exot.* t. 4, 5; *Ic. bot.* t. 80, 389.—Maxim. *Bull. Acad. Pét.* (1872), *Mél. biol.* viii.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 67.—Gren. et Godr. *Fl. de Fr.* ii. 125.—*Bot. Mag.* t. 2472.—Walp. *Rep.* ii. 639; vi. 212, 728; *Ann.* ii. 895; v. 250.

406. **Xanthium** T.[1]—Flowers[2] (nearly of *Ambrosia*) monœcious; male capitules of *Ambrosia*; involucral bracts 1–2-seriate; corolla tubular, slightly expanded at apex, 5-dentate. Stamens inserted at base of corolla, sometimes adelphous; ovary 0. Female capitules 2-flowered; involucre sacciform ovoid closed; pervious at apex, 2-rostrate, densely covered externally with glochidiate prickles, 2-celled; a few additional outer bracts shorter. Ovary and ovule of *Ambrosia*; style branches 2 exserted from involucre. Fruit (of *Ambrosia*) enclosed in hardened involucre.—Annuals, scabrous or nearly glabrous, unarmed or with 3-fid spines; leaves alternate, entire, lobed or coarsely dentate; capitules solitary or glomerate axillar; males at ends of branches; females lower; receptacle of males cylindrical, variously paleaceous between flowers; of females narrower and continuous with involucre. (*Warm and temp. reg. of both*[3] *hemispheres.*[4])

407. **Iva** L.[5]—Flowers (nearly of *Xanthium* or *Ambrosia*) monœcious; capitules 2-sexual. Corolla in female flowers short tubular or 0. Fruit obovate thick, sometimes enrolled in hairs, or immarginate, or girt with a thick rather broad margin or lacerate wing finally much enlarged.—Annual or perennial herbs, sometimes shrubby at base; leaves opposite or alternate, entire dentate, lobed or 1–2-pinnately dissected; capitules[6] in spikes or racemes more or less branched, sessile or stipitate and often nutant; other characters of *Xanthium*; receptacle small variously paleaceous between flowers; pales of campanulate, obconical or cyathiform involucre subtending or more or less enclosing the flowers;[7]

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[1] *Inst.* 438, t. 252 —L. *Gen.* n. 1056.—Gærtn. *Fruct.* ii. 418.—Less. *Syn.* 219.—DC. *Prodr.* v. 522.—Endl. *Gen.* n. 2480.—H. Bn, *Adansonia*, i. 117.—B. H. *Gen.* ii. 355, n. 349.

[2] Small, greenish.

[3] Of Amer. origin (?).

[4] Spec. 3, 4. Cav. *Icon.* t. 221.—Wight, *Icon.* t. 1104.—Reichb. *Icon. Fl. germ.* t. 1575–1577.—A. Gray, *Man.* (ed. 1856), 212.—Fr. et Sav. *Enum. pl. jap.* i. 231.—Chapm. *Fl. S. Unit. St.* 223.—Boiss. *Fl. or.* iii. 251.—Bak. *Fl. maur.* 172.—Benth. *Fl. austral.* iii. 534.—Miq. *Fl. ind.-bat.* ii. 67.—Hook. f. *Fl. brit. Ind.* iii. 303.—Oliv. and Hiern, *Fl. trop. Afr.* iii. 371.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 273.—Gren. et Godr. *Fl. de Fr.* ii. 393.—Walp. *Rep.* ii. 976; vi. 150; *Ann.* ii. 850.

[5] *Gen.* n. 1059.—Lamk, *Ill.* t. 766.—Gærtn. *Fruct.* ii. 394, t. 164.—Cass. *Dict. sc. nat.* xxiv. 43; lix. 176.—Less. *Syn.* 219.—DC. *Prodr.* v. 529.—Endl. *Gen.* n. 2485.—B. H. *Gen.* ii. 352, n. 341.

[6] Minute, greenish.

[7] Sections of the genus are:

Euphrosyne DC. *Prodr.* v. 530.—Deless. *Ic. sel.* iv. t. 28.—Endl. *Gen.* n. 2486.—B. H. *Gen.* ii. 353, n. 345; leaves unequal pinnately dissected; capitules nutant; female flower apetalous; fruit compressed and surrounded by a thick margin. (*Mexico.*)

Oxytenia Nutt. *Journ. Acad. Philad.* ser. 2, i. 172.—B. H. *Gen.* ii. 353, n. 342: leaves alternate, remotely pinnate narrow; capitules in compound racemes; fruit obovate obtusely 2-4-gonal, thickly enrolled in long hairs; female flowers apetalous.

Cyclachæna Fres. *Ind. sem. H. francf.* (1836); *Linnæa*, xii. *Litt. Ber.* 78.—B. H. *Gen.* ii. 353, n. 344: leaves alternate, or the lower opposite, bracts few often connate. (*Temp. and warm extratrop. N. and S. America.*[1])

USES.[2]—Having distinguished the various generic types and the characters of the different series, we shall find that the properties of the Compositæ vary precisely as we pass from one series to another; a peculiarity on which classic authors have long insisted: in effect the Cardueæ, Cichorieæ and Astereæ or Heliantheæ are generally distinct from each other in their qualities and uses.

The Cardueæ are mostly rich in bitter, astringent and stimulating principles. Some are diuretic and diaphoretic. Odoriferous principles are generally absent in this group. A coloured latex is met with in a few species, not generally abundant and ordinarily in quantity little appreciable at the age when these plants are used for food. Resinous and colouring matters are sometimes found. Most of the plants included in the genus Carduus have been used more or less as bitter, tonic, astringent, subacrious or diuretic, but they have now fallen somewhat into oblivion, their virtues being rarely energetic. Holy Thistle[3] (fig. 6, 7) has been one of the most celebrated as a tonic and sudorific; its root and fruit were especially used in intermittent fevers, dropsy, pulmonary, splenetic, uterine affections, itch, hemorrhoids, &c. The young leaves and stems and the receptacles are edible when cooked. *Carduus crispus*[4] (fig. 1–5) is also reputed diuretic, and its shoots are also eaten. Likewise those of *C. nutans* L., *macrocephalus* DESF., the receptacle of which is

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entire or pinnately dissected; capitules spicate or racemose; fruit obovoid immarginate; female flowers apetalous. (*N. Amer.*)

Dicoria TORR. et GRAY, *Emor. Rep. Bot.* 143.—A. GRAY, *Emor. Exp. Bot.* 86, t. 30.—B. H. *Gen.* ii. 353, n. 343; leaves alternate ovate dentate; capitules compound racemose; female flowers apetalous; fruit compressed and girt with a much enlarged lacerate wing; inner involucral bracts scarious also enlarged and finally far surmounting the outer. (*Mexico.*)

[1] Spec. 10, 11. HOOK. *Fl. bor.-amer.* t. 106.—A. GRAY, *Man.* (ed. 1856), 211.—CHAPM. *Fl. S. Unit. St.* 222.—WALP. *Rep.* ii. 607; 996 (*Cyclachæna*); vi. 155 (*Cyclachæna*); *Ann.* v. 215.

[2] ENDL. *Enchirid.* 252.—LINDL. *Veg. Kingd.* 705; *Fl. med.* 449.—GUIB. *Drog. simpl.* éd. 7, iii. 11.—ROSENTH. *Syn. plant. diaphor.* 257, 1015.

[3] *Carduus Marianus* L. *Spec.* 1153.—DC. *Fl. fr.* iv. 78.—*Silybum Marianum* GÆRTN. *Fruct.* ii. 378, t. 162, fig. 2.—GREN. et GODR. *Fl. de Fr.* ii. 204.—ROSENTH. *Syn.* 300.—*S. maculatum* MŒNCH, *Meth.* 555.—*Carthamus maculatus* LAMK, *Dict.* i. 638.—*Cirsium maculatum* SCOP. *Fl. carniol.* ii. 130 (*Our Lady's Thistle, Silver Thistle, White Thorn, Wild Artichoke, St. Mary's Milk*).

[4] L. *Spec.* 1150.—DC. *Fl. fr.* iv. 81.—GREN. et GODR. *Fl. de Fr.* ii. 230.—ROSENTH. *Syn.* 302 (*Chardon crépu*).

also edible, and *C. personata* Jacq., the young shoots of which are esteemed by the Walachs. *C. arvensis*[1] bears the galls produced by insects and believed to be a cure for hemorrhoids. The flowers yield a sweet perfume and the young leaves are edible. *C. Acanthium*[2] has a slightly astringent root formerly in repute as an antiblennorrhagic. When young it is edible like the receptacle. A thick white down which covers the leaves is used as tinder in Spain. The seeds are rich in oil good for burning; its juice has been extolled as a cure for cancer. The whole plant dried in the sun is used for heating ovens in countries destitute of wood. *C. illyricus*[3] has analogous properties. *C. Scolymus*[4] (fig. 8–10), our common Artichoke, has a thick and fleshy receptacle the alimentary use of which is well known. The young leaves even are eaten in some countries. The juice of the entire plant is accounted diuretic, bitter, antirheumatic; it is used to dye wool. The burnt stems are said to be rich in potash, and the flowers are used in Italy to curdle milk. *C. Cardunculus*[5] has analogous properties; its receptacle is little fleshy and poor as an aliment; but its leaves easily blanched and especially the middle stalk are used as a vegetable. The root of *C. acaulis*[6] is said to be edible; the leaves remove stains from garments. *C. collinus*[7] is cultivated in the East as a potherb. *C. Acarna*[8] is considered in the south of Europe an astringent and tonic. *C. eriophorus*,[9] the receptacle of which is edible, has been reputed anticancerous. With some people *C. oleraceus*[10] is a potherb, as are also *C. canus* L. and

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[1] *Serratula arvensis* L. *Spec.* 1149.—*Cirsium arvense* Scop. *Fl. carniol.* ii. 26.—Gren. et Godr. *Fl. de Fr.* ii. 226.—*Breea arvensis* Less. (*Carduus hemorrhoidalis* off.).

[2] *Onopordon Acanthium* L. *Spec.* 1158.—DC. *Fl. fr.* iv. 74; *Prodr.* vi. 618, n. 1.—Gren. et Godr. *Fl. de Fr.* ii. 204.—Rosenth. *Syn.* 300. —*Acanos. Spina* Scop. *Fl. carniol.* (ed. 2), n. 1013 (*bastard, wild, cotton thistle, Cardonet, wild Artichoke*).

[3] *Onopordon illyricum* L. *Spec.* 1158.—Gren. et Godr. *Fl. de Fr.* ii. 205.—*O. elongatum* Lamk.—*O. horridum* Viv.

[4] *Cynara Scolymus* L. *Spec.* 1159.—DC. *Prodr.* vi. 620.—Rosenth. *Syn.* 301.

[5] *Cynara Cardunculus* L. *Spec.* 1159.—DC. *Prodr.* n. 3.—Gren. et Godr. *Fl. de Fr.* ii. 206.—*C. sylvestris a* Lamk, *Dict.* i. 277 (*Cardonet*).

[6] L. *Spec.* 1156.—*C. Roseni* Vill.—*Cnicus acaulis* Hoffm. *Fl. germ.* ii. 130.—*Cirsium acaule* All. *Fl. pedem.* i. 153.

[7] *Cynara acaulis* L. *Spec.* 1160.—Desf. *Fl. atl.* t. 223.—Rosenth. *Syn.* 301.—*C. humilis* J. (not L.).—*Rhaponticum acaule* DC. *Prodr.* vi. 664, n. 8.

[8] L. *Spec.* (ed. 1), 820.—*Cirsium Acarna* Mœnch, *Suppl.* 226.—*Picnomon Acarna* Cass. *Dict. sc. nat.* xl. 188.—Gren. et Godr. *Fl. de Fr.* ii. 208.—Rosenth. *Syn.* 302.

[9] L. *Spec.* 1153.—*Cirsium eriophorum* Scop. *Fl. carniol.* ii. 130.—*Cnicus eriophorus* Hoffm.

[10] Vill. *Dauph.* iii. 21.—*Cnicus oleraceus* L. (part.).—*C. pratensis* Lamk.—*Cirsium oleraceum* All. *Fl. pedem.* n. 544.—DC. *Prodr.* vi. 647, n. 76.—Gren. et Godr. *Fl. de Fr.* ii. 216.—*C. variabile* Mœnch.

rivularis,[1] *C. palustris*,[2] *C. anglicus*,[3] *C. lanceolatus*,[4] *C. bulbosus*,[5] *C. spinosissimus*,[6] and *C. nutans*.[7] In central Europe *C. cyanoides*[8] is considered a preservative from and remedy for eruptive fevers. *C. tinctorius*[9] was formerly esteemed for its colouring matter, and the Cochinchinese are said to recommend *C. Scordium*[10] as an emmenagogue and diaphoretic. The Centaureæ are nearly all bitter tonics. The most celebrated was formerly the Great Centaury,[11] the root of which, slightly aromatic, was employed as a febrifuge, antiasthmatic, antirheumatic. Even now Blessed Thistle[12] (fig. 11–13) is reputed astringent, anticatarrhal, antihysteric; Star-thistle,[13] the roots of which are still administered in cases of intermittent fever; *C. Cyanus* L.,[14] the flowers of which were believed to cure the bites of venomous animals and also inflammatory affections of the eyes; Knapweed,[15] the root and flowers of which have been recommended as febrifuges. Similar qualities, often in milder degree, are met with in many European species, *C. axillaris* W., *montana* L., *nigrescens* W., *amara* L., *scabiosa* L., *solstitialis* L., *nigra* L., *cerinthæfolia* Sibth., *eryngioides* Lamk., and in some plants of the New World, such as *C. chilensis* Miers and *americana* Spr. Several of the plants are also tinctorial, a property especially developed in Carthamus. The best known of these is the Bastard Saffron[1] (fig. 14), the corollas of which are used as a pigment, to adulterate *Crocus sativus*, and as a pink or yellow dye; its seeds also furnish a purgative oil. *Carthamus creticus* L., *persicus*,[2] *glaucus*[3] and *leucocaulon* Sibth.[4] are in repute, the first for assisting the secretion of milk, the three latter for healing venomous bites. *C. lanatus*[5] and *ruber* L.[6] have the same uses as Blessed Thistle. *Cardopathium corymbosum*[7] furnishes the root of black Chamæleon, and *Atractylis gummifera*,[8] from the Mediterranean region, is the white Chamæleon the root of which yields a kind of cement used in Algeria; but the poisonous acrid-narcotic properties of these plants renders their use dangerous or at best suspicious.[9] *A. cancellata*[10] is nutritious and also a cure for dropsy and calculus. The Carlines have the properties of the Cardui, notably *C. acaulis*,[11] *vulgaris*[12] and *acanthifolia* All. In the south of Europe, *Stæhelina dubia*[13] is reputed a vermifuge, emmenagogue, and in Siberia *Saussurea amara*[14] an antisyphilitic. The *Echinopses* are slightly astringent, among others *E. Ritro*.[15]

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[1] Jacq. *Fl. austr.* i. 57, t. 91.—*Cnicus rivularis* W.—*Cirsium rivulare* Link.

[2] L. *Spec.* 1151.—*Cirsium palustre* Scop. *Fl. carniol.* ii. 128.

[3] Lamk, *Dict.* i. 705.—*Cirsium anglicum* Lob. —*Cnicus pratensis* W.

[4] L. *Spec.* 1149.—*C. vulgaris* Savi, *Fl. pis.* ii. 241.—*Cnicus lanceolatus* Hoffm.—*Cirsium lanceolatum* Scop.—*Eriolepis lanceolata* Cass. It has been attempted to mix the pappus with cotton to make calico.

[5] Vill. *Dauph.* iii. 16.—*C. spurius* Hoffm. —*Cnicus tuberosus* W.—*Cirsium bulbosum* DC. *Fl. fr.* iv. 118.—Gren. et Godr. *Fl. de Fr.* ii. 218.—*C. tuberosum* All.

[6] *C. glaber* Steud. *Nom.* ed. 1, 152.—*Cnicus spinosissimus* Lapeyr.—*Cirsium glabrum* DC. *Fl. fr.* iv. 463.—Gren. et Godr. *Fl. de Fr.* ii. 221.—*C. spinosissimum* Benth.—Rosenth. *Syn.* 302.

[7] L. *Spec.* 1150.—Gren. et Godr. *Fl. de Fr.* ii. 231. *C. cernuus* (*Alfredia cernua* Cass.) has also an edible root.

[8] L. *Spec.* 1152.—*Jurinæa cyanoides* DC. *Prodr.* vi. 676, n. 16.—Rosenth. *Syn.* 304.—*Serratula cyanoides* DC.—*Acarna cyanoides* Bess.

[9] Scop. *Fl. carniol.* n. 1012.—*Serratula tinctoria* L. *Spec.* 1144.—Gren. et Godr. *Fl. de Fr.* ii. 268.

[10] *Serratula? Scordium* Lour. *Fl. cochinch.* (ed. 1790), 483.—DC. *Prodr.* vi. 671, n. 24 (*Cay muoi túoi, Trach lan, Tse lan*).

[11] *Centaurea Centaurium* L. *Spec.* 1287.—DC. *Prodr.* vi. 566, n. 5.—Rosenth. *Syn.* 298.—*Chryseis Centaurium* Kost.

[12] *Centaurea benedicta* L. *Spec.* 1296.—*Carduus benedictus* Camer. *Epit.* 566.—*Cnicus benedictus* L. *Spec.* (ed. 1), 826.—Gærtn. *Fruct.* ii. t. 162, fig. 5.—DC. *Prodr.* vi. 606.—Gren. et Godr. *Fl. de Fr.* ii. 266.—Rosenth. *Syn.* 299.—Berg et Schm. *Darst. off. Gew.* t. 22 *a.*—*Calcitrapa lanuginosa* Lamk, *Fl. fr.* ii. 35.

[13] *Centaurea Calcitrapa* L. *Spec.* 1207.—Gren. et Godr. *Fl. de Fr.* ii. 261.—*Calcitrapa stellata* Lamk.—*C. Hypophæstum* Gærtn. *Fruct.* ii. t. 163, fig. 2.

[14] *Spec.* 1289.—Gren. et Godr. *Fl. de Fr.* ii. 251.—*Cyanus arvensis* Mœnch.—*C. vulgaris* Cass.—*Jacea segetum* Lamk.

[15] *Centaurea Jacea* L. *Spec.* 1293.

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[1] *Carthamus tinctorius* L. *Spec.* 1162.—Lamk, *Ill.* t. 661, fig. 3.—DC. *Prodr.* vi. 612.—Guib. *Drog. simpl.* éd. 7, iii. 21, fig. 567.—Rosenth. *Syn.* 299. The florets employed to adulterate saffron have no resemblance of form to the long obconical divisions folded back lengthwise of the *Crocus*.

[2] W. *Spec.* iii. 1707.—Rosenth. *Syn.* 300.—*Onobroma persicum* DC. *Prodr.* vi. 613, n. 3 (var. ? of *C. armenus* W.).

[3] M.-Bieb. *Fl. taur.* n. 1678.—*Onobroma glaucum* Spreng. — *Kentrophyllum glaucum* Fisch. et Mey.—DC. *Prodr.* vi. 611, n. 4.

[4] *Fl. græc.* t. 842.—*Kentrophyllum leucocarpon* DC. *Prodr.* vi. 610, n. 3.

[5] L. *Spec.* 1163.—*Atractylis lanata* Scop.—*Kentrophyllum luteum* Cass.—*K. lanatum* DC. *Bot. gall.* i. 293; *Prodr.* vi. 610, n. 1.—Gren. et Godr. *Fl. de Fr.* ii. 265.—Rosenth. *Syn.* 299.—*Atractylis lanata* Scop.—*Centaurea lanata* DC. *Fl. fr.* iv. 102.—*Heracantha lanata* Link.—*Hohenwartha gymnogyna* West (ex DC.).—*Onobroma lanata* Spreng.

[6] *Kentrophyllum rubrum* Link, *Linnæa* (1834), 580.—*Onobroma dentatum* Spreng.—*Cnicus dentatus* Forsk. —*Kentrophyllum dentatum* DC. *Prodr.* vi. 611, n. 5.

[7] Pers. *Enchirid.* ii. 500.—DC. *Prodr.* vi. 528. — *Carthamus corymbosus* L. — *Echinops corymbosus* L.—*Cnicus horridus* Forsk.—*Onobroma corymbosum* Spreng.

[8] L. *Spec.* 1161.—*Carlina gummifera* Less. *Syn.* 12.—DC. *Prodr.* vi. 547.—Gren. et Godr. *Fl. de Fr.* ii. 279.— *Carthamus gummiferus* Lamk.—*Chamæleon gummifer* Cass. *Dict. sc. nat.* l. 59.—Cav. *Icon.* iii. t. 228.—*Acarna gummifera* W. *Spec.* iii. 1169.

[9] E. Lefranc, *Sur les plantes connues des Grecs sous les noms de* Chaméléon noir *et de* C. blanc (*Bull. Soc. bot. Fr.* xiv. 48).—Guib. *Drog. simpl.* éd. 7, iii. 27. Is rich in inulin, in saccharine matter, and contains atractylate of potash. The root, as large sometimes as the thighs, assumes, on drying, a strong violet odour.

[10] L. *Spec.* 1162.—DC. *Prodr.* vi. 550, n. 3.—*Acarna cancellata* All. *Fl. pedem.* n. 561.—Sibth. *Fl. græc.* t. 839.—*Cirsellium cancellatum* Gærtn. *Fruct.* ii. t. 163, fig. 2.—Lamk, *Ill.* t. 662, fig. 1.

[11] L. *Spec.* 1161.—Gren. et Godr. *Fl. de Fr.* ii. 278.—Guib. *Drog. simpl.* éd. 7, iii. 26, fig. 570.—*C. Chamæleon* Vill. *Dauph.* iii. 31.

[12] L. *Spec.* 1161.—Gren. et Godr. *Fl. de Fr.* ii. 275.

[13] L. *Spec.* 1176.—DC. *Prodr.* iii. 544.—Gren. et Godr. *Fl. de Fr.* ii. 274.—*Serratula conica*. Lamk, *Ill.* t. 666, fig. 4.—*S. dubia* Brot. *Fl. lus.* i. 350.

[14] DC. *Prodr.* vi. 536, n. 30.—*Serratula amara* L.—*Theodora amara* Cass.

[15] L. *Spec.* 201.—Gren. et Godr. *Fl. de Fr.* ii. 201.

E. sphærocephalus[1] (fig. 15–17), used in affections of the urinary passages, is a sudorific and an aperient; from *E. viscosus*[2] a spurious mastic is extracted in Greece; in Spain *E. bulbosus* furnishes a kind of tinder, and *E. bannaticus*[3] is cultivated for food in its native country. The seeds of *Gundelia Tournefortii*[4] are used in the East as a substitute for coffee. But the most used of the Carduеæ at the present time is perhaps the Burdock,[5] the root of which is still often prescribed for chronic affections of the skin, rheumatism, syphilis, &c. The leaves are also employed; though less active they contain much more inulin.[6] In many country places tonic, febrifuge, aperitive, sudorific and diuretic properties are still ascribed to this plant.

The Mutisieæ are of little use, and their properties are very various. While *Moscharia pinnatifida*,[7] of Peru, is esteemed for its perfume, and from *Printzia aromatica*[8] aromatic infusions are prepared at the Cape, *Gerbera Bellidiastrum*[9] is gathered in China and Siberia as bitter and astringent, antiasthmatic, and *Trixis Pipitzahuac*[10] is recommended in Mexico for cholera and dysenteric affections. *T. antimenorrhœa*[11] and *brasiliensis* DC. are tonics and emmenagogues. *T. frutescens*[12] is used in Panama in the treatment of wounds and ulcerations. In Mexico *Perezia moschata*[13] is sold for the preparation of aromatic and stimulant infusions. *Chuquiraga discanthoides*,[14] of Chili, is a tree of the wood of which, exceptionally hard, flails are made for thrashing corn.

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[1] L. *Spec.* 1314.—Gren. et Godr. *Fl. de Fr.* ii. 201.—Rosenth. *Syn.* 295.—*E. multiflorus* Lamk.

[2] DC. *Prodr.* vi. 525, n. 15.—*E. spinosus* d'Urv. *Enum. pl. or.* 113.

[3] Roch. ex Schrad. *Diss. bl.* 48.—DC. *Prodr.* n. 7.—Rosenth. *Syn.* 296.—*E. ruthenicus* Reichb. *Ic. crit.* t. 450.

[4] See p. 88, not. 4.—Rosenth. *Syn.* 259.

[5] *Arctium Lappa* W. *Spec.* iii. 1631.—*A. Bardana* W.—*Lappa officinalis* All.—Gren. et Godr. *Fl. de Fr.* ii. 280. We comprise in the same species (and their properties are likewise the same) *L. major* Gærtn., *minor* DC. and *tomentosa* Lamk.

[6] Guib. *Drog. simpl.* éd. 7, iii. 17, fig. 566.—Hayn. *Arzn. Pfl.* t. 35.—Berg et Schm. *Darst. off. Gew.* t. 19, *c d*.

[7] R. et Pav. *Syst. Fl. per.* i. 136.—Rosenth. *Syn.* 304.

[8] Less. *Syn.* 108.—Harv. and Sond. *Fl. cap.* iii. 514, n. 3.—*Inula aromatica* L. *Amœn.* vi. 103.

[9] *Tussilago Bellidiastrum* L. *Hort. upsal.* 259, t. 3, fig. 2.—*Chaptalia lyrata* Spreng. *Syst.* iii. 504.—*Perdicium Anandria* R. Br.—*Anandria Bellidiastrum* DC. *Prodr.* vii. 40.—*A. radiata* Less. *Syn.* 346.—Rosenth. *Syn.* 304. This plant is not unfrequently cultivated in botanic gardens. *Perdicium discoideum* R. Br. is a simple form of it.

[10] Sch. bip. ex Rosenth. *Syn.* 305.—*Dumerilia Alamani* DC. *Prodr.* vii. 67, n. 2 (*Remedio de purga, Pipitzahuac*).

[11] Mart. ex Rosenth. *Syn.* 305.—*Prionanthes antimenorrhœa* Schrk.

[12] P. Br., *Jam.* 312, t. 33, fig. 2.—DC. *Prodr.* vii. 68, n. 12.—*Inula Trixis* L. *Amœn.* v. 406.—*Tenorea Berterii* Coll. *H. ripul.* 137 (*Chiriqui, Palo de Santa-Maria*).

[13] Llav. et Lex. *Nov. veg. descr.* i. 26.—*Acourtia? moschata* DC. *Prodr.* vii. 66, n. 6.

[14] *Flotovia discanthoides* Less. *Syn.* 95.—DC. *Prodr.* vii. 11 (*Palo mato*).

Generally the Cichorieæ possess a very abundant latex which sometimes gives them properties of a very decided character.[1] That of Wild Lettuce[2] (fig. 33, 34) is a violent narcotic poison. *Lactucarium*, the narcotic property of which is still often contested, is prepared from the juice of *Lactuca sativa*,[3] *Scariola*,[4] *altissima*[5] and their varieties.[6] In the species cultivated as vegetables, such as *L. sativa* and its numerous varieties, the lactic principle disappears completely or nearly so, and the bitter flavour often diminishes to such an extent as to render them palatable. The fruit of the Lettuce formed one of the lesser cold seeds. *L. perennis* L., *saligna* L., *quercina* L., *sagittata* W. and Kit., *Scariola* L., *augustana* All., *elongata* Muehl., *taraxifolia* Schum., *Tsitsa* Sieb., *indica* Lour.,[7] are or might be cultivated as potherbs. *L. juncea*[8] has long been a medicinal plant, bitter, reputed an antidote for dysentery. It was formerly administered as an aperient; it is now little used. The root produces a kind of gum prescribed for diarrhœa and flux. In *L. prenanthoides*[9] this gum is reddish. The bitter principle is more developed in the Chicoreæ. The Wild Chicory[10] (fig. 27–30) enjoys a high reputation as a depurative, antiscrofulous, antiscorbutic medicine. It is much cultivated, which causes it to lose a large part of its bitterness; it is grown tall to moderate its flavour as an aliment, and its root is extensively used in the north of Europe as an addition to coffee.[1] Endive[2] and its numerous varieties are perhaps still more extensively used as vegetables. Some species of *Picris* are also edible. In Siberia the young shoots of *P. hieracioides*[3] are eaten, and those of *P. echioides*[4] in many localities of Europe. At Naples *P. lacera*[5] is also a potherb. *Hieracium* is little eaten, but has medicinal properties. *H. murorum*[6] is reputed astringent, vulnerary, and *H. pilosella*[7] is, in some places, used medicinally for flux, diarrhœa, angina. *H. umbellatum*[8] has been prescribed for chronic diarrhœa. It also yields a yellow dye, as do *H. aurantiacum* L. and *venosum* L. The latter with *H. virosum* Pall. (fig. 31, 32) are poisonous. In America an antiodontalgic liquor is prepared from *H. Gronovii* L., and in Madeira *H. cheiranthifolium*[9] is employed as an astringent and tonic. *Leontodon* has nearly the properties of the Chicoreæ. *L. hispidus* L., *hastilis* L., *serotinus* W. and Kit. are edible, and sometimes *L. glabrum*[10] and *radicatum*,[11] which are also medicinal plants, are likewise eaten. *Leontodon Taraxacum*[12] combines all these qualities. Its bitterness marks it as a depurative, tonic, digestive, and its cultivated varieties and young shoots, in which the flavour is less strong, form the aliments in popular use. *L. bulbosum*, *lævigatum*, *sinense* are also potherbs. The young leaves of *Lapsana communis*[13] and of *grandiflora* Bieb.[14] are eaten, and are sometimes prescribed for sore nipple, but are probably simply emollients. In the south of Europe *Zacyntha verrucosa*[15] is considered useful in cutaneous affections, and *Hedypnois stellatus* and *edulis* are consumed as vegetables. *Scolymus hispanicus*[1] is an aliment more widely spread; but the root is also medicinal and reputed astringent, diuretic, and is even prescribed in chronic cutaneous diseases. Its down is used for moxas; its flowers sometimes for adulterating saffron. *Scolymus maculatus* L. has the same properties, which are nearly also those of Scorzonera, vegetables and medicines among which, with other species, we find *S. hispanica*[2] and the various Salsifis[3] of our gardens and fields. *Scorzonera laciniata*[4] and *octangularis*[5] are aliments with some inhabitants of Walachia and Moldavia.

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[1] "Succo lacteo, quem substantiis variis, amaris imprimis, resinosis, salinis et narcoticis peculiaribus prægnantem intra vasa propria vehunt, virtutem debent." (Endl.)

[2] *Lactuca virosa* L. *Spec.* 1119.—DC. *Fl. fr.* iv. 10; *Prodr.* vii. 137, n. 29.—Gren. et Godr. *Fl. de Fr.* ii. 320.—Guib. *Drog. simpl.* éd. 7, iii. 14.—Rosenth. *Syn.* 309.—Berg et Schm. *Darst. off. Gew.* t. 30 *c.*—Trim. et Bentl. *Med. pl.* iii. n. 160.—Fluck. et Hanb. *Pharmacogr.* 353.—*L. sinuata* Forsk. (ex DC.).—? *L. ambigua* Schrad.

[3] L. *Spec.* 1118.—Gren. et Godr. *Fl. de Fr.* ii. 320.—DC. *Prodr.* vii. 138, n. 41.

[4] L. *Spec.* 1119.—Gren. et Godr. *Fl. de Fr.* ii. 319.—*L. sylvestris* Lamk, *Dict.* iii. 406 (*Scarole*, *Escarole*).

[5] Bieb. *Fl. taur.-cauc.* Suppl. n. 1585.—DC. *Prodr.* vii. 136, n. 23.—*L. orientalis altissima flore luteo* T., *Inst. Cor.* 36.

[6] Messrs. Hanbury and Fluckiger (*Pharmacogr.* 354) admit the four preceding species as sources of *lactucarium*; that cropped near Zell in Rhenish Prussia is from a biennial plant. We know not if it is the same as that from which M. Aubergier extracts *lactucarium* near Clermont-Ferrand, and which is said to be a fixed form of *L. altissima*; it is not *L. capitata* DC., nor *L. virosa*, to which is attributed the production of the German *lactucarium* (Guib. *Drog. simpl.* éd. 7, iii. 12–14). *L. altissima* has been considered (G. Pl.) simply a variety of *L. Scariola*.

[7] See Rosenth. *Syn.* 310.

[8] *Chondrilla juncea* L. *Spec.* 1120.—Jacq. *Fl. austr.* t. 427.—DC. *Prodr.* vii. 142, n. 3.—Gren. et Godr. *Fl. de Fr.* ii. 314.—Rosenth. *Syn.* 311.—*C. latifolia* Bieb. *Fl. taur.-cauc.* ii. 244.—*C. rigens* Reichb.—*C. acanthophylla* Borkh.

[9] Scop. *Fl. carniol.* ed. 2, ii. 100, t. 49.—*L. inermis* Forsk.—*Chondrilla prenanthoides* Vill.—*C. paniculata* Lamk.—*Prenanthes chondrilloides* Ard.

[10] *Cichorium Intybus* L. *Spec.* 1142.—DC. *Prodr.* vii. 84, n. 1.—Gren. et Godr. *Fl. de Fr.* ii. 286.—Guib. *Drog. simpl.* éd. 7, iii. 15.—Rosenth. *Syn.* 306 (*Ecoubette bleue*, *Cheveux de paysan*).

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[1] In error evidently; for used alone it gives a laxative infusion of a disagreeable taste, which fatigues the digestive tube, and causes difficulty and obstruction.

[2] *C. Endivia* W. *Spec.* iii. 1629.—DC. *Prodr.* n. 2 (*Scariole*).

[3] L. *Spec.* 1115.—Gren. et Godr. *Fl. de Fr.* ii. 303.—*P. lappacea* Lap.

[4] L. *Spec.* 1114.—*Helminthia echioides* Gærtn. *Fruct.* ii. 368.—DC. *Prodr.* vii. 133, n. 1.—Gren. et Godr. *Fl. de Fr.* ii. 305.—*Crepis echioides* All. *Fl. pedem.* 811.

[5] *Crepis lacera* Ten. *Fl. neap.* ii. 179, t. 74 (in Italy, *Angina*, *Cichoria di montagna*).

[6] L. *Spec.* 1128.—Gren. et Godr. *Fl. de Fr.* ii. 374.

[7] L. *Spec.* 1125.—Gren. et Godr. *Fl. de Fr.* ii. 345.

[8] L. *Spec.* 1131.—Gren. et Godr. *Fl. de Fr.* ii. 387.

[9] *Andryala cheiranthifolia* Ait.—Rosenth. *Syn.* 312.—*A. tomentosa* Scop.

[10] *Hypochœris glabra* L. *Spec.* 1140.—*H. minima* Cyrill.

[11] *Hypochœris radicata* L. *Spec.* 1140.—*Porcellites radicata* Cass.

[12] L. *Spec.* 1122.—*L. officinalis* With.—*L. vulgare* Lamk.—*Taraxacum officinale* Vill.—Berg et Schm. *Darst. off. Gew.* t. 7 c.—*T. Leontodon* Dum.—*Hedypnois Taraxacum* Scop. (*Dandelion*, *Dent-de-lion*).

[13] L. *Spec.* 1141.—Gærtn. *Fruct.* t. 157, fig. 1.—Gren. et Godr. *Fl. de Fr.* ii. 291.—*Lampsana communis* DC. *Prodr.* vii. 76.

[14] Bieb. *Fl. taur.-cauc.* n. 1680.—*L. lyrata* W.—*L. glandulifera* Cass.

[15] Gærtn. *Fruct.* ii. 358.—*Lapsana Zacyntha* L. *Spec.* 1141.

The Vernonieæ proper furnish few medicaments, at least in our country, where they are little known; but it is otherwise with the subdivision Eupatorieæ. *Vernonia anthelminthica*[6] (fig. 35, 36) is still the most famous species of the genus; its fruits and roots, we are assured, effectually destroy worms; they also form anti-rheumatic medicines. In tropical Asia *V. squarrosa*[7] is extolled as an emmenagogue, *V. Rheedii* Kostl. as a stomachic and diaphoretic, *V. chinensis*[8] and *cinerea*[9] as tonics and antidiarrhœtics, and *V. linifolia* Bl. as an aromatic tonic. In the United States *V. prœalta* W. and *altissima* Nutt. are considered, rightly or wrongly, as alexipharmic. Brazil extols the aromatic, stimulant properties of *V. odoratissima* K. and *scabra* Pers.; and from *V. arborescens* Sw., a species from the Antilles, stimulant and digestive infusions are prepared. *V. leptophylla* DC., of the Moluccas, is esteemed by the natives as forming, with the juice of *Pinanga*, tonic, pectoral and even aphrodisiac drinks. *Elephantopus* is recognized as astringent and sudorific in both worlds; it has, in fact, nearly the properties of our Centaureæ and are sometimes administered as febrifuges: *E. scaber*[1] and *Martii*[2] are specially cited. *Pacourina edulis*[3] is a vegetable in Cayenne; its leaves are used, and the large receptacles of its capitules are employed like those of our artichokes.

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[1] L. *Spec.* 1143.—Gren. et Godr. *Fl. de Fr.* ii. 390.—*Myscolus microcephalus* Cass.

[2] L. *Spec.* 1112.—Gren. et Godr. *Fl. de Fr.* ii. 308.

[3] Chiefly the white or garden (*Scorzonera porrifolia*—*Tragopogon porrifolium* L.) or *Barbelo*, and *S. pratensis*.—*Tragopogon pratense* L., species of which the roots are eaten.

[4] L. *Spec.* 1114.—*S. paucifida* Lamk.—*Podospermum laciniatum* DC. *Fl. fr.* éd. 3, n. 2984; *Prodr.* vii. 111, n. 6.

[5] W. *Spec.* iii. 1506 (part.).—*Podospermum octangulare* Roth.—DC. *Prodr.* n. 1. *S. undulata*, *major*, *angustifolia*, *dubia*, *villosa*, *crocifolia* (*Tragopogon* of authors) are also edible in some countries, likewise *S. humilis* L. *Spec.* 1112.—Gren. et Godr. *Fl. de Fr.* ii. 307, *tuberosa* Pall., *purpurea* L., *plantaginea* Scheich., *parviflora* Jacq., *graminifolia* L., *Laurentii* Hook. f.

[6] W. *Spec.* iii. 1634.—DC. *Prodr.* v. 61, n. 265.—Rosenth. *Syn.* 258.—*Conyza anthelminthica* L. *Spec.* 1207.—*Serratula anthelminthica* Roxb.—*Ascaricida anthelminthica* Cass. *Dict.* iii. Suppl. 38.—*Baccharoides anthelminthica* Mœnch (*Calageri*, *Kalie-zeerie*).

[7] *Serratula Scordium* Lour. *Fl. cochinch.* (ed. 1790), 483 (*Cay muoi tú'i*, *Trach ian*, *Tsẹ̆ lán*).

[8] *Conyza chinensis* Lamk (not L.).

[9] Less. *Linnæa* (1829), 291.—DC. *Prodr.* n. 52.—*Conyza cinerea* L.—*Isomeria cinerea* Wight.—*Chrysocoma violacea* Schum. In all tropical regions this worthless herb is esteemed as a medicine.

The useful species of *Eupatorium* are very numerous. The reputation of Hemp Agrimony[4] (fig. 42) was considerable among the ancients; but at the present time no great confidence is accorded to its virtues as a tonic, a febrifuge, an antiscorbutic, or even as an alexipharmic. From *E. triplinerve*[5] (fig. 44), a native of tropical Asia and cultivated in our colonies of both the old and new world, a tea-like beverage, digestive and aromatic, is prepared which merits preservation. *E. perfoliatum*[6] is quoted as a diuretic, sudorific and emetic. A decoction from it is used in the United States as a febrifuge. *E. Lallavei*[7] furnishes an incense-odorous resin, bitter and aromatic, said to be exciting and heady. *E. teucriifolium*[8] is recommended in many parts of N. America as a diuretic, diaphoretic and febrifuge; *E. sophiæfolium* DESC., in the Antilles, as useful in liver and spleen complaints; *E. Dalea*,[9] in Jamaica,[10] as a substitute for Vanilla; *E. purpureum*, in the United States, as salutary in cases of gravel and renal calculus; *E. repandum* W., in the Antilles, as an emmenagogue, and *E. amarum* as an aromatic bitter; *E. altissimum*, in the United States, as a diuretic and febrifuge; *E. sanctum*, in Mexico, *glutinosum*, *chilense*, *triflorum*, *celtidifolium*, *deltoideum*, in Central and S. America, as tonics and febrifuges; *E. febrifugum*,[11] in Mexico and Cuba, as an antidote for intermittent fevers and a powerful tonic. More noise has been made of the virtues, still somewhat disputed, of the *Mikania* section of *Eupatorium* which produce the medicaments known as *Guaco*. The principal appears to be *E. parviflorum*[1] (fig. 43), but many others have been pointed out, particularly *E. satureifolium*,[2] *scandens*,[3] *opiferum*,[4] *officinale*.[5] The last is a powerful tonic often substituted for quinquina. We have not to discuss here the alexipharmic properties of *Guaco*, disputed absolutely by some and ardently maintained by a large number of observers who assure us that the use, internal and external, of these plants not only cures the bite of the most venomous serpents, but has a most marked preventive effect. In Europe *Guaco* has been especially prescribed as a tonic. *E. lamiifolium*,[6] from the neighbourhood of Quito, and some other allied species, yield a blue dye. In Peru *E. Chilca*[7] is indicated as an aromatic plant. *E. aromatisans*,[8] of Jamaica, is said to be used for perfuming Havanna cigars.[9]

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[1] L. *Spec.* 1313 (part.).—DC. *Prodr.* v. 86, n. 1.—ROSENTH. *Syn.* 259. *E. carolinianus* W. is perhaps only a form.

[2] GRAH. ex ROSENTH. *loc. cit.* 259 (*Fumo bravo*, *Erva do collegio*).

[3] AUBL. *Guian.* ii. 800, t. 316.—*Haynea edulis* W.—*Pacourinopsis integrifolia* CASS.

[4] *Eupatorium cannabinum* L. *Spec.* 1175.—DC. *Fl. fr.* iv. 129.—GREN. et GODR. *Fl. de Fr.* ii. 85.—CAZ. *Pl. méd. indig.* (éd. 3), 422.

[5] VAHL, *Symb.* iii. 97.—*E. Ayapana* VENT. *H. Malm.* t. 3.—DC. *Prodr.* v. 169, n. 188.—TRATT. *Thes.* t. 16.—GUIB. *Drog. simpl.* éd. 7, iii. 64.—ROSENTH. *Syn.* 261.

[6] L. *Spec.* 1174.—BIGEL. *Med. Bot.* i. 38, t. 2.—TRIM. et BENTL. *Med. pl.* iii. n. 147.—*E. connatum* MICHX.

[7] *Rosa Panal*, *Rosa Maria* of the Mexicans (L. SOUBEIR. *Journ. pharm.* sér. 3, xxxviii. 198;—GUIB. *Drog. simpl.* éd. 7, iii. 64).

[8] W. *Spec.* iii. 1753; *H. berol.* t. 32.—ROSENTH. *Syn.* 261.—*E. pilosum* WALT.—*E. verbenæfolium* MICHX.

[9] L. *Spec.* 171.—SW. *Obs.* 298.—JACQ. *H. schœnbr.* ii. 10, t. 46.—*Critonia Dalea* DC. *Prodr.* v. 140, n. 1.—*Wickstrœmia glandulosa* SPRENG.

[10] L.—ROSENTH. *Syn.* 261 (*Gravel-root* of the Americans).

[11] SESS. et MOC. *Fl. mex. ined.* (ex DC. *Prodr.* v. 104, n. 1).—*Stevia febrifuga* MOC.—*Piqueria trinervis* CAV. *Icon.* iii. 19, t. 235 (*Xoxonitztal*, *Yoloxiltic*).

The *Agerata* have properties similar to those of the *Eupatoria* proper. *A. conyzoides*,[10] a native of S. America and spread over most of the tropical regions of the globe, is used in the treatment of flatulency and is also a febrifuge. *Adenostemma viscosum*,[11] growing in Asia and Oceania, is said to have antispasmodic leaves and a stimulating sternutative sap. *A. biflorum* Less., of India, has analogous properties. *A. tinctorium* is cultivated in the far East for the fine blue colour it furnishes. Some *Stevias* have an agreeable aniseed odour, and digestive infusions are prepared from their leaves. *Kuhnia* of the section *Liatris* is prescribed in N. America as diuretic and tonic; especially used are the roots of *K. spicata*,[1] *scariosa*,[2] *squarrosa*,[3] *dubia*, *pilosa*, *elegans*, *picrostachya*, *hursutifolia*, *aspera*, *cylindracea*, *sphæroidea*, *graminifolia*. In Europe *Adenostyles albifrons*[4] and *alpina*[5] are considered pectoral species comparable to Tussilago.

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[1] Aubl. *Guian.* ii. 797, t. 315 (1775).—*E. vincæfolium* Lamk, *Dict.* ii. 410 (1783).—*E. amarum* Vahl, *Symb.* iii. (1775), 93.—*Mikania amara* W. *Spec.* iii. 1744 (1800).—Bak. *Mart. Fl. bras.* vi. 237, t. 66.—*M. Guaco* H. B. *Pl. æquin.* ii. 84, t. 105.—Desc. *Fl. méd. Ant.* iii. 211, t. 197.—DC. *Prodr.* v. 193.—Guib. *Drog. simpl.* éd. 7, iii. 65.—Rosenth. *Syn.* 262.—*M. Huaco* De Rieux, *Cav. Ann. cienc. nat. Matr.* n. 18, 316.—*M. Tafallana* H. B. K. *Nov. gen. et spec.* iv. 137.—*M. Tafallæ* Spreng. *Syst.* iii. 422.—*M. argyrostigma* Miq. *St. surinam.* 186, t. 55.—*M. cuneata* Sch. bip. mss. (ex Bak.).—*M. stipulata* Sch. bip. *Miq. St. surin.* 191.—*M. cornifolia* G. Don (ex Bak.) (*Guaco morado* of the Columbians).

[2] Lamk, *Dict.* ii. 411.—*Mikania satureifolia* W. *Spec.* iii. 1747.—*Nothites satureifolia* DC. *Prodr.* v. 186, n. 2.—*N. angustifolia* Cass. *Dict. sc. nat.* xxxv. 164.

[3] L. *Spec.* 1171.—Jacq. *Ic. rar.* t. 169.—*Mikania scandens* W. *Spec.* iii. 1743 (part.).—DC. *Prodr.* v. 199, n. 89.

[4] *Mikania opifera* Mart. *Isis* (1824), vi. 583 (*Erba de cobra*).

[5] *Mikania officinalis* Mart. *Isis* (1824), 587.—*M. brachypoda* DC. *Prodr.* n. 103.—*Catophyllum tropæifolium* Pohl.—*C. deltoideum* Pohl (ex Bak.).—*Cacalia Cor Jesu* Vell. *Fl. flum.* viii. t. 71 (*Curaçao de Jesu*).

[6] H. B. K. *Nov. gen. et spec.* iv. 126 (not Link).—DC. *Prodr.* v. 163, n. 145.

[7] H. B. K. *Nov. gen. et spec.* iv. 126.—DC. *Prodr.* n. 236 (*Chilca*).

[8] DC. *Prodr.* v. 150, n. 62.

[9] Guibourt thought that this *Trebel* of Havannah was *E. triplinerve*; he afterwards referred it to *Piqueria trinervia* (*Drog. simpl.* éd. 7, iii. 64).

[10] L. *Spec.* 1175.—Hook. *Exot. Fl.* t. 15.—DC. *Prodr.* v. 108, n. 1.—*A. hirtum* Lamk.—*A. obtusifolium* Lamk.—*A. mexicanum* Sims, *Bot. Mag.* t. 2524.

[11] Forst. *Nov. gen.* n. 15.—DC. *Prodr.* v. 111, n. 9.—*Lavenia erecta* Gaudich.—*Verbesina Lavenia* Lindl.—*Putumba* Rheed. *H. malab.* x. t. 63.

The Corymbiferæ or Radieæ, that is our groups of Astereæ, Heliantheæ, &c., have also special properties due to bitter and astringent principles, to aromatic stimulating essences, or to acrious resins which render some species very dangerous. The seeds are often gorged with a fixed oil, and the organs of vegetation, particularly those underground, may be rich in inulin, which takes the place of starch. *Aster Tripolium*,[6] a species inhabiting brackish marshes, formerly had some reputation as a resolutive and vulnerary; it was a tinctorial plant. *A. Amellus*[7] the same nearly. In Chili *A. Quila* is food for cattle. *A. argophyllus* is an Australian species containing a peculiar camphor. In the United States *A. puniceus* L., *cordifolius* L. and *Novæ-Angliæ* L. are considered antispasmodic and depurative. In Cochinchina *A. indicus* Lour.[8] is said to be astringent. Several *Shawias* have a decided camphorous or musk-like odour, particularly *S. argophylla*,[9] of Australia, and some species of the section *Olearia*. In St. Helena the *Commidendra* were noted as trees yielding a stimulating resinous gum, principally *C. gummiferum.*[1] Several species of *Erigeron* have been extolled as medicinal; among ourselves, *E. acre*,[2] which was held to be bechic, incisive, and slightly exciting, and *E. canadense*,[3] a poor American herb, introduced into Europe, where it multiplied and was said to be an emmenagogue and stimulant. *E. alpinum* L. and *Villarsii* BELL, are reported as exciting, aromatic; *E. podolicum* BESS., *serotinum* WEIH., slightly tonic. *E. ? cochinchinense* PERS.[4] is an emmenagogue, and a very near American species, *E. philadelphicum* L., is diuretic, diaphoretic and antihydropic. *Erigerons* of the section *Conyza* are little active, and the Conyzas employed in medicine are mostly those of *Pluchea* to be noticed presently. The common daisy or Little Marguerite[5] (fig. 51) has been used in medicine; it was considered a vulnerary, slightly laxative; but, although recommended in many places for a great number of affections, it is little active and scarcely used; its young leaves are edible. At the Cape the root of *B. bipinnata*[6] is still employed against the bite of venomous serpents. *Grangea maderaspatana*[7] is used in India as a stomachic and antispasmodic, and *G. latifolia*[8] as aromatic and digestive. *Chrysocoma Coma-aurea*[9] is reputed alexipharmic in South Africa. *Psiadia* from the eastern isles of South Africa is often resinous, balsamic;[10] in India and Java *P. volubilis*[11] is a condiment often added to the sauce for many kinds of fish. The very numerous *Baccharis* of S. America have many properties. Very often they are shrubs rich in colouring matter. *B. halimifolia*,[12] cultivated in our gardens as an ornamental plant, gives a yellow dye. *B. polyantha*[1] is used in Columbia as a green dye for *punchos* and other articles of clothing. In Brazil *B. ochracea* Spreng., *triptera* DC., *Gaudichaudiana* DC., serve as tonics, and are prescribed for anæmia and chlorosis *B. arbutifolia*,[2] from the same country, is in repute as a cordial, digestive and stomachic. In Chili and Peru *B. genistelloides*[3] and *venosa*[4] are recommended for intermittent fevers and venomous bites. Several species of *Solidago* are medicinal plants; *S. Virga-aurea*[5] (fig. 52, 53), prescribed by our fathers as aromatic astringent. *S. simplex* H. B., *sempervirens* L., *odora*,[6] *canadensis* L., American species, have similar properties. The last yields a yellow dye, and *S. vulneraria* Mart. is employed in Brazil in the treatment of wounds. In Mexico *Hysterionica glutinosa*[7] is similarly applied. The *Inulas* have played a considerable part in medicine, especially *I. Helenium*[8] (Elecampani) (fig. 55, 56), from which inulin has derived its name, and the root of which is commonly sold for the treatment of phlegmasia of the mucous glands, flux, hemorrhoids and itching irritations. *Inula Conyza*,[9] another species formerly prescribed, is useful for diarrhœa and even dysentery. *I. germanica, britannica, salicina, hirta, Oculus-Christi, viscosa, odora*, have also enjoyed some reputation; they are more or less energetic astringents. *I. saxatilis* is considered in Greece an emmenagogue and antihysteric. *I. conyzoides* on the contrary is drastic and substituted for jalap. *I. graveolens* and *viscosa* have been in repute against bites of vipers. *I. crithmifolia* is a diuretic, and *I. Royleana*, of Cashmere, an alexipharmic, it is said. *I. bifrons* enters into the composition of certain dentrifices with *Spilanthus oleracea*. *Pulicaria* has equally astringent properties; whence the specific name of *P. dysenterica*.[1] *P. vulgaris* GÆRTN., *P. undulata* KOSTL., of Egypt and Arabia, have analogous qualities. *Buphthalmum salicifolium*,[2] from southern Europe, may be substituted for *Inula Helenium*, being alexipharmic, and *B. oleraceum* LOUR. is a potherb in Cochinchina. *B. asteriscoides*[3] and *dentatum*,[4] Cape species, are aromatic camphor-like plants, recommended as diaphoretics, and from the former a stimulant alcoholic liquor is prepared, used in the country. In the same countries tea-like infusions are made from *Leysera tenella*[5] for throat affections. The species of *Gnaphalium* are little active. Several, however, were employed as medicines; those still in use are pectoral, diuretic, sudorific, as *G. dioicum*[6] and *margaritaceum*. *G. fœtidum* L. is accounted aromatic astringent, and in S. America *G. roseum* H. K.[7] is esteemed as a bitter, tonic and stomachic. *G. Leontopodium*[8] is the *Edelweiss* of the German Alps, a plant of our steep mountainous pastures esteemed as ornamental and a reputed pectoral. *Helichrysum* has the same properties as *Gnaphalium*, slightly sudorific and bechic, as *H. Stœchas*,[9] *H. arenarium*.[10] *H. fœtidum*[11] is an aromatic astringent, like *H. sanguineum*, the underground portion of which, in Greece, yields a peculiar oil. The inflorescence, furnished with coloured bracts the brilliancy of which is not altered by desiccation, causes them to be highly esteemed, under the name of Everlastings, for decorating tombs, churches and houses, and a very considerable trade in them is carried on in the south of Europe and the East. *H. orientale* GÆRTN., *arenarium*, *bracteatum*, *angusti-*

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[1] *Liatris spicata* W. *Spec.* iii. 1636.—Sims, *Bot. Mag.* t. 1411.—Rosenth. *Syn.* 260.—*L. picta* Bart.—*L. gracilis* Lodd. *Bot. Cab.* t. 1909 (not Nutt.).—*L. pilosa* Lindl. *Bot. Reg.* t. 395.—*Serratula spicata* L. *Spec.* 1141.—*Suprago spicata* Gærtn. *Fruct.* t. 167 (*Gay Feather*, *Button Snake-root*). The N. American Indians esteem this plant as a remedy for snake-bites.

[2] W. *Spec.* iii. 1635.—DC. *Prodr.* v. 129, n. 7.—*Serratula scariosa* L.—*Vernonia scariosa* Poir. *Dict.* viii. 502.

[3] W. *Spec.* iii. 1634.—DC. *Prodr.* n. 4.—Lindl. *Fl. med.* 450.—*Serratula squarrosa* L. (*Rattlesnake's Master*).

[4] Reichb. *Fl. excurs.* 278.—Gren. et Godr. *Fl. de Fr.* ii. 86.—*Cacalia Petasites* Lamk, *Dict.* i. 531.

[5] Bluff et Fing. *Comp. Fl. germ.* ii. 329.—Gren. et Godr. *Fl. de Fr.* ii. 87.—*A. viridis* Cass.—*Cacalia alpina* Jacq. *Fl. austr.* t. 234.—*Tussilago Cacalia* Scop.

[6] L. *Spec.* 1226.—Gren. et Godr. *Fl. de Fr.* ii. 101.—*Tripolium vulgare* Nees, *Aster.* 153.—Rosenth. *Syn.* 264.

[7] L. *Spec.* 1226.—DC. *Prodr.* v. 231, n. 35.—Gren. et Godr. *Fl. de Fr.* ii. 101.—*A. amelloides* Rœm.—*Amellus officinalis* Gatt.

[8] *Fl. cochinch.* (1790), 503 (*Mà lân hôa*).

[9] *Eurybia argophylla* Cass. *Dict.* xxxvii. 487.—DC. *Prodr.* v. 267, n. 11.—*Olearia argophylla* F. Muell.—Benth. *Fl. austral.* iii. 470.—*Aster argophyllus* Labill. *Pl. N.-Holl.* ii. 52, t. 201.

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[1] DC. *Prodr.* v. 344, n. 3 (*Gum-wood-tree*). *C. rotundifolium* DC. is the *Gum-wood* and the *Bastard Cabbage* of the natives.

[2] L. *Spec.* 1211.—GREN. et GODR. *Fl. de Fr.* ii. 97.—*Inula acris* BERNH.—*Trimorphæa acris* CASS.

[3] L. *Spec.* 1210.—*E. paniculatum* LAMK.

[4] *E. philadelphicum* LOUR. *Fl. cochinch.* (1790), 500 (not L.): "Potenter menses ciet, nec tuto" (*Cay con hát*).

[5] *Bellis perennis* L. *Spec.* 1248.—DC. *Fl. fr.* iv. 185.—LAMK, *Ill.* t. 677.—GREN. et GODR. *Fl. de Fr.* ii. 106 (*Petite Pâquerette, Petite Consoude*).

[6] *Osteospermum bipinnatum* THUNB. *Fl. cap.* 717.—*Garuleum bipinnatum* LESS.—DC. *Prodr.* v. 309.—HARV. and SOND. *Fl. cap.* iii. 92.

[7] POIR. *Dict.* Suppl. iii. 825.—DC. *Prodr.* v. 373.—*G. Adansonii* CASS.—*Artemisia maderaspatana* L.—*Cotula maderaspatana* W. *Spec.* iii. 2170.

[8] LAMK, *Ill.* t. 699, fig. 1.—*G. dissecta* BOJ. (ex POIR.).—*Cotula sinapifolia* ROXB.—*C. latifolia* PERS.—*Dichrocephala latifolia* DC. *Prodr.* v. 372, n. 3.—*D. erecta* LHÉR.

[9] L. *Spec.* 1178.—HARV. and SOND. *Fl. cap.* iii. 93.—*C. aurea* THUNB.—*C. cernua* L.—*C. patula* L.—THUNB. *Fl. cap.* 626.

[10] Particularly *P. balsamica* DC. (*African balm*) and *P. glutinosa* JACQ. *H. schœnbr.* ii. t. 152.—*Conyza glutinosa* LAMK.

[11] *Conyza volubilis* WALL.—*C. prolifera* BL.—*Microglossa volubilis* DC. *Prodr.* v. 320.

[12] L. *Spec.* 1204.—DUHAM. *Arbr.* éd. 2, t. 60.—DC. *Prodr.* v. 412, n. 97.—*B. cuneifolia* MŒNCH.—*Conyza halimifolia*.

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[1] H. B. K. *Nov. gen. et spec.* iv. 64.—DC. *Prodr.* v. 403, n. 33.

[2] H. B. K. *loc. cit.* 54.—DC. *Prodr.* n. 136. —? Vahl, *Symb.* iii. 97.—*Conyza arbutifolia* Lamk, *Dict.* ii. 92.

[3] Pers. *Enchir.* ii. 425 (part.).—DC. *Prodr.* n. 193.—*Molina reticulata* Cass.—*Conyza genistelloides* Lamk, *Dict.* ii. 93.

[4] DC. *Prodr.* n. 194.—*Molina venosa* R. et Pav. *Syst.* 212 (very near the preceding).

[5] L. *Spec.* 1235.—DC. *Prodr.* v. 338, n. 67. —Gren. et Godr. *Fl. de Fr.* ii. 92 (*Consolida surracenica* off.).

[6] Ait. *H. kew.* iii. 214.—*S. retrorsa* Michx. —*S. lanceolata* Bosc. (*Golden Rod*). In the United States it is a substitute for tea.

[7] Dun. *Mém. Mus.* v. 49.—*Doronicum glutinosum* W.—*Donia glutinosa* R. Br.—*Aurelia decurrens* Cass.—*Demetria glutinosa* Lag.—*Inula glutinosa* Pers.

[8] L. *Spec.* 1236.—DC. *Prodr.* v. 463.—Guib. *Drog. simpl.* éd. 7, iii. 60, fig. 587.—Rosenth. *Syn.* 269.—Lindl. *Fl. med.* 456.—Caz. *Pl. méd. indig.* éd. 3, 114.—Berg et Schm. *Darst. off. Gew.* t. 22 *f.*—Fluck. and Hanb. *Pharmaçogr.* 340.—Trim. et Bentl. *Med. pl.* iii. n. 150.—*Aster Helenium* Scop. *Fl. carn.* n. 1078.—*A. officinalis* All.—*Corvisartia Helenium* Mér. *Fl. par.* éd. 2, ii. 261.

[9] DC. *Prodr.* v. 464, n. 1.—Gren. et Godr. *Fl. de Fr.* ii. 174.—*I. glomeriflora* Lamk, *Fl. fr.* ii. 150.—*Conyza vulgaris* Lamk.—*Conyza bifrons* Gouan.—*Aster bifrons* All. (*Conyze des près, C. moyenne*). Formerly a magic herb which exorcised witchcraft, enchantments, thunder, hail, &c.

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[1] GÆRTN. *Fruct.* ii. 461.—GREN. et GODR. *Fl. de Fr.* ii. 179.—*Aster dysentericus* ALL.—*Inula dysenterica* L.

[2] L. *Spec.* 1275.—ROSENTH. *Syn.* 271.

[3] *Osmites asteriscoides* L. *Spec.* 1285.—*Osmitopsis asteriscoides* CASS. *Dict.* xxxvii. 5.—HARV. and SOND. *Fl. cap.* iii. 305.

[4] *Osmites dentata* THUNB. *Fl. cap.* 701.—*O. camphorina* GÆRTN. *Fruct.* t. 74, fig. 3 (not L.).—*Anthemis afra* BURM.

L. *Spec.* 1249 (not THUNB.).—DC. *Prodr.* vi. 279.—HARV. and SOND. *Fl. cap.* iii. 294.

[6] L. *Spec.* 1119.—*Antennaria dioica* GÆRTN. *Fruct.* ii. 410, t. 167, fig. 3.—DC. *Prodr.* v. 269.—GREN. et GODR. *Fl. de Fr.* ii. 189.—GUIB. *Drog. simpl.* éd. 7, iii. 35.

[7] ROSENTH. *Syn.* 291 (*Gardalobo*).

[8] SCOP. *Fl. carniol.* ii. 150.—*Antennaria Leontopodium* GÆRTN. *Fruct.* ii. 410.—*Filago Leontopodium* L. *Spec.* 1312.—*Leontopodium alpinum* CASS. *Dict. sc. nat.* xxv. 474.—*L. umbellatum* BL. et FING. *Fl. germ.* ii. 346.

[9] DC. *Fl. fr.* iv. 132.—GREN. et GODR. *Fl. de Fr.* ii. 184.—*Gnaphalium Stœchas* L. *Spec.* 1193.—*G. citrinum* LAMK (*Stœchas neapolitana* off.).

[10] DC. *Fl. fr.* iv. 132.—GREN. et GODR. *Fl. de Fr.* ii. 183.—*Gnaphalium arenarium* L.

[11] CASS. *Dict.* xxv. 469.—GREN. et GODR. *Fl. de Fr.* ii. 185.—*Gnaphalium fœtidum* L.—*Anaxeton fœtidum* (

folium Sweet, are the most cultivated. *H. alatum*,[1] an Australian species, is an admirable Everlasting with white bracts. At the Cape *Phænocoma*[2] affords fine Everlastings which might be used as ornamental. *Filago* has the medicinal virtues of *Helichrysum* and *Gnaphalium*; *F. arvensis*[3] and *germanica*[4] are almost the only ones employed. At the Cape *Stœbe Rhinocerotis*[5] is used as a bitter and tonic digestive. *Tarchonanthus camphoratus*[6] is there in great repute as an aromatic and stimulant; infusions are prepared from it which act like those of sage. Its light wood takes a fine polish, and is used for making musical instruments. Tall trees are rare in this family. A most remarkable exception is *Synchodendron* of Madagascar. One, *S. ramiflorum*,[7] fifty feet in height, indicates to the inhabitants, by its flowering, when to sow rice; the other, perhaps not specifically distinct, *S. Bernieri*,[8] is described as having a very lofty trunk and a wood of good quality. The genus *Placus*, in which we also include *Pluchea*, *Blumea* and *Laggera*, that is *Conyza* of certain authors, is composed of plants generally aromatic and stimulant. *P. tomentosus*[9] is an aromatic herb of Cochinchina, where it both grows wild and is cultivated. *P. balsamifer*[10] is employed in Java as a sudorific and expectorant in pulmonary and rheumatic affections. Baths are prepared from it to relieve persons fatigued and exhausted. *P. fœtidus*,[11] a N. American species, with some allied plants of the same country, is recommended as stimulant and aromatic. *P. grandis*,[12] from tropical Asia, yields a sort of camphor extolled by the Birmese for dysentery and pneumatosis of the digestive canal.

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[1] *Ammobium alatum* R. Br. *Bot. Mag.* t. 2459.—Benth. *Fl. austral.* iii. 583.

[2] There is, in fact, only one species, *P. prolifera* Don, which grows in the mountains, and is *Xeranthemum proliferum* L. and *Helichrysum proliferum* W. We have referred it to the latter genus; it has several times flowered in Europe.

[3] L. *Spec.* 1312.—*Gnaphalium arvense* W.—*Oglifa arvensis* Cass. Its leaves dye yellow.

[4] L. *Spec.* 1311.—*Gnaphalium germanicum* W. It is sometimes used against diarrhœa in infants.

[5] L. f.—Thunb. *Fl. cap.* 728.—*S. cernua* Thunb.—*Elythropappus Rhinocerotis* Less. *Syn.* 341.—Harv. and Sond. *Fl. cap.* iii. 274, n. 5 (*Rhinoster-bosch* of the Cape colonists).

[6] L. *Spec.* 1179.—Harv. and Sond. *Fl. cap.* iii. 118. *T. minor* Less. (*Syn.* 208) has the same properties.

[7] Boj. ex DC. *Prodr.* v. 93.

[8] H. Bn, *Bull. Soc. Linn. Par.* 278 (*Taloha an hombé*).

[9] Lour. *Fl. cochinch.* (1790), 497 (*Cúc bánh it, Hoa tim*).

[10] *Conyza balsamifera* L. *Spec.* 1208.—*C. vestita* Wall.—*Pluchea balsamifera* Less.—*Blumea balsamifera* DC. *Prodr.* v. 447, n. 84.—*Baccharis Salvia* Lour. *Fl. cochinch.* 494 (*Cay dai bi*). This species produces the *Camphre gnai*, used in medicine by the Chinese. *P. aromaticus* (*Blumea aromatica* DC. *Prodr.* n. 78) has the same properties.

[11] *Pluchea fœtida* DC. *Prodr.* v. 452, n. 13.—*P. marylandica* Cass. *Dict.* xlii. 2 (not DC.).—*Baccharis fœtida* L.—*Conyza marylandica* Pursh.—*Gynema dentata* Rafin.

[12] *Blumea grandis* DC. *Prodr.* v. 447.—*Conyza grandis* Wall.—Rosenth. *Syn.* 268.

P. chinensis[1] is recommended for ulcerous affections for those of hairy skin; associated with *Pinanga*, its root is prescribed for cough. *P. indica*[2] is an aromatic vulnerary plant, used to prepare sedative baths. In Brazil *P. suaveolens*[3] is considered a good antihysteric and carminative. In Hindoo China, species of *Sphæranthus*, as *S. hirtus*,[4] *cochinchinensis*[5] and *microcephalus*,[6] are in repute as tonics, febrifuges, ophthalmic remedies, and for throat and stomach affections. Among the Calenduleæ are highly odorous plants, and first among the Marigolds themselves are *Calendula officinalis*[7] (fig. 59–61) and *arvensis*[8] (fig. 62, 63). They are little used at the present day, and their properties are the same. Their leaves were considered resolutive, and, preserved in vinegar, are still though rarely used as a condiment. The corollas are sometimes used to colour butter; also to adulterate saffron. The capitules, the odour of which is strong, were formerly in repute as stimulants, emmenagogues and antispasmodics; they have been prescribed as antiscrofulous, febrifuges, sudorifics, slightly narcotic. They have been used in the treatment of ulcers and dropsy, as they are also said to be diuretic. At the Cape *Stobæa heterophylla*[9] is considered lithontriptic, and is used in renal maladies.

The Heliantheæ are often aromatic. The common Sunflower[10] (fig. 69, 70), so often cultivated as an ornamental annual, has seeds the embryo of which is rich in oil. It is still extracted in some countries. From the fruit roasted a kind of coffee is prepared. The Indians make bread of it. The pith is used for moxas, and the receptacle is sometimes eaten like that of the artichoke. The Jerusalem Artichoke is another *Helianthus*.[11] Its rhizomes, rich in inulin, form a good vegetable, the flavour of which also resembles that of the artichoke. It has been proposed as a substitute for the potato. *H. giganteus* L., *indicus* L., *tubæformis* L. have the same uses as *H. annuus*. Their seeds yield oil, as do also those of *H. speciosus* Hook., a Mexican species. *H. strumosus* L. is eaten in Canada like Jerusalem artichoke. In Chili *H. thuriferus*[1] produces a resinous substance substituted for incense. Some species of *Verbesina* are in use: *V. virginica* L., in the United States, as a diaphoretic; *V. crocata* Less., in Mexico, for wounds; *V. calendulacea* L., in India, as aromatic and stimulant. *Podachænium eminens*,[2] so often cultivated in our gardens, has large leaves, the odour of which is quite that of Renette or Queen Apple (*Pomme de Reinette*), and the abundant pith of its stems is specially esteemed for making microscopic sections. Several *Spilanthi* are renowned as medicinal. The Para cress[3] (fig. 71, 72) has a piquant peppery taste, and in very small quantities has been employed as a vermifuge. In a larger dose it becomes a masticatory and a powerful sialagogue. It is antiscorbutic, and is at least equal to Cochlearia; excellent for the mouth, it enters into the preparation of numerous dentifrices. It is equally in repute in the Antilles as a stimulant and even as a hydragogue. *S. Acmella*,[4] an E. Indian herb introduced into many tropical countries, is a powerful masticatory; the inhabitants of Ternate thought to loosen the tongues of their infants by causing them to munch its leaves. *S. alba* W., *urens* Jacq., *lanceolata* Lk., *radicans* Jacq. have the same properties as *S. oleracea*. In Brazil *S. ciliata* K., an antiscorbutic plant, is regarded as possessing the properties of *Guaco*. *Eclipta* is used medicinally in tropical countries. *E. erecta*[5] and its various forms[6] are extolled for pulmonary affections, bronchitis, asthma. In decoction it is applied in obstinate affections of the skin, particularly elephantiasis; its leaves are used to dye hair black. *Siegesbeckia*

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[1] *Conyza chinensis* L. *Spec.* 1208.—*Blumea chinensis* DC. *Prodr.* v. 444.

[2] *Baccharis indica* L. *Spec.* 1205.—*Pluchea indica* Less. *Linnæa* (1831), 150.

[3] *Gnaphalium suaveolens* Arrab. *Fl. flum.* t. 100.—*Pluchea Quitoc* DC. *Prodr.* n. 2.

[4] W. *Spec.* iii. 2395.—Bl. *Bijdr.* 891.—DC. *Prodr.* v. 369, n. 2.

[5] Lour. *Fl. cochinch.* 510 (*Co bô xit*).

[6] W. *Spec.* 2395.—DC. *Prodr.* n. 1.—*S. globosus* Wall.—*S. lævigatus* Wall.—*S. africanus* Wall. (*Boulette*).

[7] L. *Spec.* 1304.—Gærtn. *Fruct.* t. 168.—Hook. *Bot. Mag.* t. 3204.—DC. *Prodr.* vi. 451, n. 1.—Guib. *Drog. simpl.* éd. 7, iii. 33.—Caz. *Pl. méd. indig.* éd. 3, 1018.—*Caltha vulgaris* C. Bauh. *Pin.* 275.—*C. officinalis* Mœnch, *Meth.* 585.

[8] L. *Spec.* 1303.—DC. *Prodr.* n. 6.—Gren. et Godr. *Fl. de Fr.* ii. 197.—*C. ceratosperma* Viv.—*Caltha arvensis* Mœnch.

[9] Thunb. *Fl. cap.* 622.—Harv. and Sond. *Fl. cap.* iii. 499.—*S. adenocarpa* DC.—*Apuleia heterophylla* Less.

[10] *Helianthus annuus* L. *Spec.* 1276.—DC. *Prodr.* v. 585.—*H. indicus* L. *Mantiss.* 117.—*H. platycephalus* Cass.—*H. pumilus* Pers.

[11] *H. tuberosus* L. *Spec.* 1277.—Jacq. *H. vindob.* t. 161.—DC. *Prodr.* n. 36.

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[1] Mol. *Chil.* 336.—*H. glutinosus* Hook. and Arn.—*Diomedea thurifera* Bert. herb.—Colla, *Mém. Acad. Tur.* xxxviii. t. 31 (*Maravilla*).

[2] See p. 206, not. 5.

[3] *Spilanthus oleracea* Jacq. *H. vindob.* ii. t. 135.—DC. *Prodr.* v. 624, n. 30.—Mér. et Del. *Dict. Mat. méd.* vi. 504.—Guib. *Drog. simpl.* éd. 7, iii. 56, fig. 586.—Rosenth. *Syn.* 276.—*Pyrethrum Spilanthus* Med. *Act. pal.* iii. 242, 275.—*Bidens acmelloides* Berg. *Act. holm.* (1768).—*B. fervida* Lamk, *Dict.* i. 415. *B. fusca* Lamk is a variety.

[4] L. *Syst. veg.* 610.—DC. *Prodr.* n. 21.—*Verbesina Acmella* L. *Mantiss.* 475.—*Acmella Linnæi* Cass.

[5] L. *Mantiss.* 286.—DC. *Prodr.* 490, n. 1.—*E. adpressa* Mœnch.—*Cotula alba* L. *Syst.* ii. 564.—*Micrelium asteroides* Forsk.

[6] *E. punctata* and *E. prostrata*, united under the common name of *E. alba* Hassk. *Pl. jav. rar.* 528.

orientalis,[1] a common plant in tropical Asia, is a bitter balsam; applied to the gums it produces salivation; its properties appear to be similar to those of *Spilanthus*. Some American *Rudbeckias* have a tonic root, notably *R. purpurea*, MICHX. *Bidens* furnishes stimulants and sialagogues, especially *B. cernua*,[2] *tripartita*[3] and some of the section *Dahlia*.[4] They are also frequently rich in inulin and in colouring and tinctorial matter: first most of our common indigenous species, then those of the section *Coreopsis*.[5]

Guizotia abyssinica,[6] believed to be a native of Abyssinia, is one of the plants most recommended for the extraction of oil from its seeds. It is cultivated on a large scale in many tropical countries, particularly in India; the oil it produces is good both for eating and burning. The *Caleas* are astringent and bitter. In Mexico *C. Zacatechichi* SCHLCHTL.[7] has been extolled as a remedy for cholera, and we are assured that *C.* (*Caleacte*) *glabra*,[8] from the province of St. Catherine in Brazil, is a powerful agent against intermittent fever. *Galinsoga parviflora*[9] is considered by the Indians of Peru a very good antiscorbutic and vulnerary. *Madia sativa*[10] and, with it, *M. mellosa* W., and *viscosa* CAV., which are probably only varieties, are also herbs with oleaginous seeds. *Melampodium australe*,[11] from S. America, is an aromatic bitter used in its native country in the treatment of affections of the urinary passages; it is diuretic and sudorific, as are also *M. hirsutum*[12] and *brasilum*.[13]

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[1] L. *Spec.* 1269.—DC. *Prodr.* v. 495.

[2] W. *Spec.* iii. 1716.—DC. *Prodr.* v. 594, n. 4.—*Coreopsis Bidens* L. *Spec.* 1281.

[3] L. *Spec.* 1165.—GREN. et GODR. *Fl. de Fr.* ii. 168.—*B. cannabina* LAMK. *B. chilensis* DC., *chrysanthemoides* MICHX, *leucantha* PŒPP., *graveolens* MART., *bullata* L. are cited as having similar properties.

[4] Especially *D. Cervantesii* LAG., *coccinea* CAV. and *variabilis* DESF., the roots of which are rich in inulin, and in Mexico are used as tonics and in intestinal affections. They are also dye plants.

[5] Such as *C. tinctoria*, *C. verticillata* L., of N. Amer., &c.

[6] CASS. *Dict.* lix. 248.—OLIV. and HIERN, *Fl. trop. Afr.* iii. 384.—*G. oleifera* DC. *Mém. Genève*, vii. 5, t. 2, 3.—*Polymnia abyssinica* L. F. *Suppl.* 383.—*P. frondosa* BRUCE, *Trav.* t. 52.—*Parthenium luteum* SPRENG.—*Jægeria abyssinica* SPRENG.—*Heliopsis platyglossa* CASS.—*Helianthus oleifer* WALL.—*Buphthalmum Ramtilla* HAM. (*Ram-til*, *Ramtilla*, *Teel*, *Nook Werinnua*).

[7] ROSENTH. *Syn.* 278 (*Teschitchi*, *Herba Athanasiæ amaræ* off.).

[8] DC. *Prodr.* v. 674, n. 19.—H. BN, *Bull. Soc. Linn. Par.* 295.

[9] CAV. *Icon.* iii. 41, t. 281.—DC. *Prodr.* v. 677, n. 1.—*G. quinqueradiata* R. et PAV.—*Wiborgia Acmella* ROTH (*Paica-Jullo*, *Pacoyuyu fino*, *Pacoyuyu cimarron*).

[10] MOL. *Chil.* (éd. fr.), 336.—DC. *Mém. Soc. Gen.* 277; *Prodr.* v. 691.—GUIB. *Drog. simpl.* éd. 7, iii. 59.—*M. viscosa* CAV. *Icon.* t. 298 (*Madi*, *Melosa*).

[11] LŒFL. *It.* 268.—L. *Spec.* 1303.—*Centrospermum xanthoides* H. B. K. *Nov. gen. et spec.* iv. t. 397.—*Acanthospermum xanthioides* DC. *Prodr.* v. 521.

[12] *Acanthospermum hirsutum* DC. *Prodr.* v. 522, n. 2.

[13] *Acanthospermum brasilum* SCHR. *Pl. rar. H. monac.* ii. 63 (var. of the preceding ?).

In Columbia *Espeletia grandiflora*[1] produces a fine resin of a yellowish colour, used in binding books and also in medicine. *Silphium terebinthinaceum*[2] and *laciniatum*,[3] from N. America, superb ornamental plants, also furnish a medicinal purgative resin. *S. edule*[4] has in our day been introduced to our culture as a plant with an alimentary stock. *Clibadium surinamense*[5] on the other hand is a poisonous plant, for in Guiana and Mexico it serves, with several Leguminosæ, poisonous Euphorbiaceæ, &c., to poison the water-courses for fish. *C. sylvestre*[6] and *asperum*[7] have the same properties. *C. terebinthinaceum*[8] is aromatic and used for sedative baths, as *Placus balsamifer;* and *C. neriifolium*,[9] in New Granada, produces a kind of perfumed incense. *Laxmannia arborea*[10] is one of the rare Compositæ the trunk of which becomes woody. In St. Helena the wood is used for domestic purposes. In America *Helenium* has the reputation of curing fevers; it is an aromatic bitter. *H. autumnale*[11] (fig. 87–89), in particular, is considered a febrifuge and tonic; its leaves and inflorescences are used. *H. Rosilla*[12] is cultivated around Irkutsk for making a sternutative powder. *Gaillardia* is often tinctorial. In Chili *G. aromatica*[13] and *glauca*[14] are esteemed for their yellow colour. In Peru *Flaveria Contrayerba*[15] has a high reputation as an alexipharmic, and is said to equal *Mikania* for bites of venomous serpents. *Tagetes* are all rich in a volatile essence which gives them a strong sometimes fetid odour. The African Marigold,[1] grown in our gardens, and *T. patula*[2] (fig. 96) have stimulating, emmenagogic, anthelminthic capitules; the fruit and roots are purgative. *T. florida* Sweet, *lucida* L., *pusilla* K., *micrantha* L. have an aromatic aniseed odour. The leaves of *T. glandulifera*[3] are aromatic bitter; the plant contains an oleoresin which renders it a vermifuge. At Curaçao *Pectis febrifuga*[4] is used in intermittent fevers. *Porophyllum japonicum*[5] has a hæmostatic root. The Senecios are for the most part but little active. Physicians of old, however, made use of *Senecio vulgaris*[6] (fig. 97), which was considered an emollient, resolutive and even a febrifuge for cattle. *S. Jacobæa*[7] was also recommended as astringent, vulnerary and detersive; it dyes wool a deep green. *S. Doronicum* L., *sarracenicus* L., *Fuchsii* Gmel., *Doria* L., *odorus* L., *aureus* L., *acanthifolius* Kost. were also medicinal plants. In Africa *S. Anteuphorbium*[8] was considered a contra-poison for the milky juice of the Euphorbiæ; *S. Forskahlii*,[9] a disinfectant; *S. pendulus*,[10] a remedy for ear diseases; and *S. repens*,[11] *Haworthii*[12] and *neriifolius*,[13] pectorals and antirheumatics. *S. bulbosus* is used in the treatment of chronic ophthalmia and angina; *S. sarmentosus*,[14] of abscess; it is a vegetable in Indo-China. In India *S. Pseudo-China*[15] is employed as a substitute for quinquina; in Mauritius *S. Ambavilla*,[16] as vulnerary, antisyphilitic, depurative, pectoral, diaphoretic and diuretic;[17] in Chili *S. chamædryfolius*,[18] as antiperiodic and febrifuge;

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[1] H. B. *Pl. æquin.* ii. 11, t. 70.—DC. *Prodr.* v. 516 (*Fraylejon*). At Bogota the resin bears the name of *Trementhina.*

[2] L. *Suppl.* 383.—JACQ. *H. vindob.* i. t. 43.—DC. *Prodr.* v. 512, n. 6 (*Rhubarb of Louisiana*).

[3] L. *Spec.* 1301.—JACQ. F. *Ecl.* i. t. 90.—*S. spicatum* POIR. *S. gummiferum* ELL. yields a similar product.

[4] *Polymnia edulis* WEDD. *Ann. sc. nat.* ser. 4, vii. 114 (*Aricoma, Yacon,* à la PAZ; *Jiquima, Jiquimilla* (TRI.), in Columbia; *Poire de terre Cochet*, in Europe). In Columbia *P. frutescens* is also used for domestic purposes.

[5] L. *Mantiss.* 294.—DC. *Prodr.* v. 505, n. 1.—*C. fœtidum* ALAM. (ex L.).

[6] *Baillieria sylvestris* AUBL. *Guian.* 307.—ROSENTH. *Syn.* 272.

[7] *Baillieria aspera* AUBL. *Guian.* ii. 805, t. 317.—*Trixis scabra* SW.—*T. aspera* PERS.—*Oswalda baillierioides* CASS.

[8] DC. *Prodr.* v. 506, n. 9.—*Baillieria terebinthinacea* SPRENG. *Syst.* iii. 624.

[9] DC. *Prodr.* n. 14.—*Baillieria neriifolia* H. B. K. *Nov. gen. et spec.* iv. 289.—*Trixis neriifolia* H. *Rel. hist.* i. 645 (*Incienso*).

[10] See p. 241, not. 6.

[11] L. *Spec.* 1120.—LAMK, *Ill.* t. 688.—HOOK. *Bot. Mag.* t. 2994.—*H. pubescens* AIT.—*Helenia autumnalis* GÆRTN.—*H. dcourrens* MŒNCH, *Meth.* 589.

[12] TURCZ.—ROSENTH. *Syn.* 1116 (*Rosilla*).

[13] *Cephalophora aromatica* SCHRAD. *Ind. sem. H. gœtt.* (1830).—DC. *Prodr.* v. 662, n. 3.—*C. tenera* CASS. (*Mançanilla del campo*). Its odour is that of Chamomile.

[14] *Cephalophora glauca* CAV. *Ic.* vi. 79.—*Hymenopappus glauous* SPRENG.—*Santolina tinctoria* MOL. (*Poquill* FEUILL.).

[15] PERS. *Syn.* ii. 689.—DC. *Prodr.* v. 635.—*F. capitata* J.—*Milleria Contrayerba* CAV. *Icon.* i. 2, t. 4.—? *Ethulia Bidentis* L.—*Vermifuga corymbosa* R. et PAV. *Syst.* 210 (*Contrayerba, Mataguzanos*).

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[1] *Tagetes erecta* L. *Spec.* 1249.—DC. *Prodr.* v. 643, n. 6.—*T. major* Gærtn. *Fruct.* t. 172 (*Cempoaxochilt* Hern.).

[2] L. *Spec.* 1249.—Sims, *Bot. Mag.* t. 150.

[3] Schr. *Pl. rar. H. monac.* t. 54.—DC. *Prodr.* n. 12.—*T. minuta* L.—*T. bonariensis* Pers.—*T. glandulosa* Link, *Enum.* ii. 339.—*Bœbera glandulosa* W.

[4] V. Hall, ex Rosenth. *Syn.* 1115 (*Thebink*).

[5] DC. *Prodr.* v. 650, n. 20.—*Senecio japonicus* Thunb. *Fl. jap.* 315.—*Kleinia japonica* Less. *Linnæa* (1831), 134 (*Kwugai Sai*).

[6] L. *Spec.* 1216.—Guib. *loc. cit.* iii. 51.—Gren. et Godr. *Fl. de Fr.* ii. 111.

[7] L. *Spec.* 1219.—Gren. et Godr. *Fl. de Fr.* ii. 115.—*S. neglectus* Desvx, *Obs.* 129.

[8] *Cacalia Anteuphorbium* L. *Spec.* 1168.—*Kleinia Anteuphorbium* DC. *Prodr.* vi. 338, n. 17.—*Ante-Euphorbium* Dod. *Pempt.* 378.

[9] *Kleinia ? odora* Forsk. *Fl. æg.-arab.* 146.—*Cacalia odora* Vahl, *Symb.* iii. 90.

[10] *Kleinia ? pendula* Forsk. *loc. cit.* 145.

[11] *Cacalia repens* L.—*Kleinia repens* Haw. *Pl. succ.* 313.—DC. *Pl. grass.* t. 42.

[12] *Kleinia Haworthii* DC. *Prodr.* n. 15.—*K. tomentosa* Haw. *Pl. succ.* 314.

[13] *Kleinia neriifolia* Haw. *Pl. succ.* 312.—*Cacalia Kleinia* L. *K. ficoides* Haw. has the same properties.

[14] *Gynura sarmentosa* DC. *Prodr.* vi. 298, n. 2.—*Cacalia sarmentosa* Bl. *Bijdr.* 907.

[15] Andr. *Bot. Repos.* t. 291.—Rosenth. *Syn.* 295.—*S. speciosus* W. *Spec.* iii. 1991.

[16] Pers. *Syn.* ii. 436.—DC. *Prodr.* vi. 376, n. 201.—*Hubertia Ambavilla* Bory, *Voy.* i. 334, t. 14, fig. 1 (*Ambaville*).

[17] This plant must not be confounded with the *Hypericum* of the same name.

[18] Less.—Rosenth. *Syn.* 294.—*S. nigrescens* Hook. and Arn. (*Nülgue* Feuill.).

in the United States *S. Balsamitæ*[1] and *obovatus*,[2] as tonics, astringents, vulneraries and stimulants; in Mexico *S. parviflorus*,[3] as diaphoretic and disobstruent; *S. canicida*,[4] is one of the most violent poisons of the country. *S. palustris* DC., in some parts of Russia, is applied to abscesses and gatherings; and *S. sonchifolius*[5] is regarded in tropical Asia as a sovereign cure for asthma, enteritis and contusions. *Doronicum*[6] has been prescribed as alexipharmic, and the leaves of *D. plantagineum*[7] are smoked in Smoland; but the most useful of all is *D.* (*Arnica*) *montanum*[8] (fig. 98–100), which has still a great reputation as vulnerary. The roots and capitules have been reputed stimulant and even febrifuge, and the dried leaves are a sternutator; they are also smoked in the Vosges, in Russia and in Sweden. Extolled beyond measure by some and decried by others, this plant has been applied to the treatment of more than a score of maladies, and demands serious study. *Euryops multifidus*[9] produces an aromatic resin at the Cape. *Labium* is often covered with a thick down, and *L. igniarium*,[10] from equinoctial America, owes to this property its use as a sort of tinder and as an antihemorrhage. In the Antilles a stomachic alcoholic tincture is prepared from *Neurolæna lobata.*[11] The greater part of *Petasites* have pectoral flowers, principally among us *P. Farfara*[12] (fig. 101), the use of which as a bechic, emollient and diaphoretic is popular. *P. vulgaris*[1] (fig. 102–105) has sudorific, diuretic and emmenagogic capitules. Its leaves are useful in the treatment of scurf. *P. niveus* Cass. and *albus* Gærtn. have the same properties.

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[1] Muehlb. *W. Spec.* iii. 1998.—*S. lyratus* Michx.

[2] Muehlb. *W. Spec.* iii. 1999.—*S. Balsamita* W.—*S. obovatus* Ell.

[3] H. B. K. *Nov. gen. et sp.* t. 365.—*S. Vulneraria* DC. *Prodr.* n. 528.—*Cineraria vulneraria* Alam.

[4] *Pharmac. mex.* ex Teissier, *Thès. Fac. méd. Par.* [1867], n. 170 (*Itzcuimpatli*).

[5] Mœnch.—*Cacalia sonchifolia* L.—*Emilia sonchifolia* DC. *Prodr.* vi. 302, n. 1. *S. sagittatus* (*Emilia sagittata* DC. *Prodr.* n. 3.—*E. flammea* Cass.—*Cacalia sagittata* Vahl) is a potherb in Java.

[6] Particularly *D. Pardalianches* L.—*D. cordatum* Lamk.—*D. austriacum* Jacq., *caucasicum* Bieb., *scorpioides* W.

[7] L. *Spec.* 1247.—DC. *Prodr.* vi. 321, n. 7.—Gren. et Godr. *Fl. de Fr.* ii. 107.

[8] Lamk, *Dict.* ii. 312.—*D. oppositifolium* Lamk.—*D. Arnica* Desf.—*Arnica montana* L. *Spec.* 1245 (part.).—Blackw. *Herb.* t. 595.—Schkuhr, *Handb.* t. 248.—DC. *Prodr.* vi. 317, n. 1.—Gren. et Godr. *Fl. de Fr.* ii. 110.—Mér. et Del. *Dict. Mat. méd.* i. 419.—Guib. *Drog. simpl.* éd. 7, iii. 33, fig. 573.—Pereir. *Elem. Mat. med.* ed. 4, ii. p. 26.—Berg et Schm. *Darst. off. Gew.* t. 13 *d.*—Trim. et Bentl. *Med. Pl.* iii. n. 158.—Fluck. et Hanb. *Pharmacogr.* 349.—H. Bn, *Dict. encycl. sc. méd.* vi. 154.

[9] DC. *Prodr.* vi. 444.—Harv. and Sond. *Fl. cap.* iii. 412.—*Othonna multifida* L. f.

[10] *L. Bonplandi* Cass. *Dict.* xxvi. 206.—*Andromachia igniaria* H. B. *Pl. æquin.* ii. 104, t. 112; *Nov. gen. et spec.* iv. 100.—*Diplostephium igniarium* Spreng.

[11] R. Br. *Obs. Comp.* 120.—DC. *Prodr.* vi. 292.—*Conyza lobata* L. *Spec.* 1207 (*Salvia cimarrona, Halberweet*).

[12] *Tussilago Farfara* L. *Spec.* 1214.—DC. *Prodr.* v. 208.—Gren. et Godr. *Fl. de Fr.* ii. 91.—Guib. *Drog. simpl.* éd. 7, iii. 62, fig. 588.—Caz. *Pl. méd. indig.* éd. 3, 1076.—Berg et Schm. *Darst. off. Gew.* t. 7 *d.*—*T. vulgaris* Lamk, *Fl. fr.* ii. 71.—*T. rupestris* Wall. (*Herba Tussilaginis* s. *Ungulæ caballinæ* off.).

A great many species of *Matricaria*, as defined by us, are employed in medicine: *M. Chamomilla*,[2] or Wild Chamomile, used for the same purposes as *M. nobilis*[3] (fig. 106, 107), but much less bitter, and from which a blue essential oil is extracted, sometimes used as a medicine. *M. nobilis*, the odour of which is strong and its taste very bitter, forms an energetic stomachic; the essence extracted from it is pale green or colourless. Often substituted for the preceding are *M. arvensis*,[4] *parthenioides* and *Chrysanthemum Parthenium*,[5] which is cultivated with simple or double and ornamental capitules. *M. Cotula*[6] was formerly used as an antihysteric. The most active of the plants of this genus appears to be *M. Pyrethrum*[7] (fig. 108–110), or African Pyrethrum, from the Mediterranean region, the root of which, of strong odour, irritating, and burning taste, is esteemed by the physician; it is an energetic sialagogue, and enters into the composition of many waters and other dental preparations. *M. capensis*[8] has the same uses in South Africa as our Chamomiles; and in the same country *M. multifida*[9] is employed in the treatment of skin diseases and rheumatism. The species of *Chrysanthemum* formerly used are very numerous, all more or less aromatic bitter, but now for the most part abandoned, as *C. Leucanthemum*,[1] *segetum*,[2] *indicum*,[3] from which a digestive infusion and ophthalmic fumigations are prepared in Japan, *C. roseum*, *carneum*, *sinense*, *Myconis* and *frutescens*. *C. rigidum* Vis. is now preferred for making insecticide powders, but *C. corymbosum*, *cinerariæfolium*, and the common Tansy[4] (fig. 114), a congener the intense odour of which indicates aromatic stimulant qualities are also used. *C. Balsamita*[5] (fig. 113) is probably the most odorous species of this genus. The Santolins used to be popular medicines. *Santolina Chamæcyparissus*,[6] an odoriferous insecticidal plant, sometimes employed in perfumery, is still considered a good vermicide. *S. fragrantissima*, from Arabia, is also anthelminthic; the Arabs treat ophthalmia with its juice, and various kinds of mucous phlegmasia with the decoction of its leaves. *S. jamaicensis* cures dyspepsia; and *S. viridis* W., *squarrosa* W., *rosmarinifolia* L. have the same properties as our *S. Chamæcyparissus*. The Achilleæ, with us congeners of the Santolinæ, have similar virtues. Milfoil or Yarrow[7] (fig. 111, 112) is still a popular remedy, a vulnerary and mild astringent. Sneesewort[8] was commonly employed as a sialagogue and sternutative. Woolly Achillea[9] is a Swiss vulnerary; the extremities are prescribed in the Alps as stimulant, tonic, febrifuge. Scented Achillea[10] also bears the name of *True Genipi*, while *A. nana*[11] is the *Bastard Genipi*. The Genipis will be considered when speaking of Absinth. *Santolina Ageratum*,[12] *atrata*, *cuneifolia*, *falcata*, *macro-*

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[1] Desf. *Fl. atl.* ii. 270.—DC. *Prodr.* v. 206, n. 1.—*P. officinalis* Mœnch.—Gren. et Godr. *Fl. de Fr.* ii. 89.—*Tussilago Petasites* Hopp. *Tasc.* 35.

[2] L. *Spec.* 1266.—Gren. et Godr. *Fl. de Fr.* ii. 148.—Guib. *Drog. simpl.* éd. 7, iii. 50, fig. 583.—Trim. et Bentl. *Med. pl.* iii. n. 155.—Berg et Schm. *Darst. off. Gew.* t. 23 *f.*—*Chamomilla officinalis* C. Koch.—*Leucanthemum Chamæmelum* Lamk (*Camomille ordinaire*, *Amaron*).

[3] *Anthemis nobilis* L. *Spec.* 1260.—Gren. et Godr. *Fl. de Fr.* ii.—Guib. *loc. cit.* 52, fig. 584.—Berg et Schm. *loc. cit.* t. 23 *e.*—Bentl. et Trim. *loc. cit.* n. 154.—*A. odorata* Lamk.—*Chamomilla nobilis* Godr. *Fl. Lorr.* ii. 19.—*Chamæmelum nobile* All.

[4] *Anthemis arvensis* L. *Spec.* 1261.—Guib. *loc. cit.* 53.—*A. agrestis* Wallr.—*Chamæmelum arvense* All.

[5] L. *Spec.* 1255.—*M. odorata* Lamk.—*Leucanthemum Parthenium* Gren. et Godr. *Fl. de Fr.* ii. 145.—*Chrysanthemum Parthenium* Pers.—*Pyrethrum Parthenium* Sm.—*Tanacetum Parthenium* Sch. bip.

[6] *Anthemis Cotula* L. *Spec.* 1261.—Gren. et Godr. *Fl. de Fr.* ii. 153.—*A. fœtida* Lamk.—*A. psorosperma* Ten.—*Chamæmelum Cotula* All.—*Maruta fœtida* Cass.—*M. Cotula* DC. *Prodr.* vi. 13.

[7] *Anthemis Pyrethrum* L. *Spec.* 1262.—Lamk, *Ill.* t. 683, fig. 4.—*Anacyclus Pyrethrum* DC. *Fl. fr.* Suppl. 480; *Prodr.* vi. 15.—Guib. *Drog. simpl.* éd. 7, iii. 54, fig. 585.—Fluck. et Hanb. *Pharmacogr.* 342.—H. Bn, *Dict. encycl. sc. méd.* iv. 53.—Bentl. et Trim. *Med. pl.* iii. n. 151. Part of the Pyrethrum of commerce is furnished by *Anacyclus officinarum* Hayn., *Arzn. Gew.* ix. 46.—Berg et Schm. *Darst. off. Gew.* t. 34 *e.*—Bentl. et Trim. *loc. cit.* n. 152.

[8] L. *Mantiss.* 115.—*M. africana* Burm.—*Cotula capensis* L.

[9] *Cotula multifida* DC.—Rosenth. *Syn.* 283. There are many tinctorial Matricarias, particularly *M. tinctoria* (*Anthemis tinctoria* L.), *M. nigrescens* (*Anthemis nigrescens* W.), *M. chia* (*Anthemis chia* L.) and *M. rosea* (*Anthemis rosea* Sibth. et Sm.), which the Greek physicians formerly used as tonics, emmenagogues, stimulants.

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[1] L. *Spec.* 1251.—*Leucanthemum vulgare* Lamk, *Fl. fr.* ii. 137.—Gren. et Godr. *Fl. de Fr.* ii. 140.

[2] L. *Spec.* 1254.—Gren. et Godr. *Fl. de Fr.* ii. 146.—*Xanthophthalmum segetum* Sch. bip.

[3] L. *Spec.* 1253.—*Pyrethrum indicum* Cass. *Dict.* xliv. 149 (not Roxb.).—DC. *Prodr.* vi. 62, n. 49. The great winter Chrysanthemum of our gardens is *C. indicum* Thunb. (*Pyrethrum sinense* Sab.).

[4] *Chrysanthemum Tanacetum.* — *Tanacetum vulgare* L. *Spec.* 1184.—Gren. et Godr. *Fl. de Fr.* ii. 137.—Berg et Schm. *Darst. off. Gew.* t. 22 *d.*—*T. sibiricum* Falk.

[5] *Tanacetum Balsamita* L. *Spec.* 1184.—*Pyrethrum Tanacetum* DC. *Prodr.* vi. 63, n. 53.—*Balsamita vulgaris* W.—*B. major* Dod.—*B*, Pers.—*B. mas* Blackw.

[6] L. *Spec.* 1179.—Gren. et Godr. *Fl. de Fr.* ii. 160.—DC. *Prodr.* vi. 35.

[7] *Santolina Millefolium.*—*Achillea Millefolium* L. *Spec.* 1267.—Gren. et Godr. *Fl. de Fr.* ii. 162.

[8] *Santolina Ptarmica.* — *Ptarmica vulgaris* Clus.—Blackw. *Herb.* t. 256.—DC. *Prodr.* vi. 23, n. 20.—*Achillea Ptarmica* L. *Spec.* 1266.—Gren. et Godr. *Fl. de Fr.* ii. 165.

[9] Var. (?) of *Achillea nana.*

[10] *Achillea moschata* Jacq. *Fl. austr.* App. t. 33.—*A. Genipi* Murr. *App. med.* i. 68.—*A. livia* Scop. *Del. ins.* t. 3.—*Ptarmica moschata* DC. *Prodr.* vi. 20, n. 5 (*Iva*).

[11] L. *Spec.* 1267.—Gren. et Godr. *Fl. de Fr.* ii. 167.—*Ptarmica nana* DC.

[12] *Achillea Ageratum* L. *Spec.* 1264.—Mill. *Ic.* t. 10.—DC. *Prodr.* vi. 27, n. 16.

phylla, *magna*, *nobilis* have been extolled as medicines. The *Athanasiæ*, from South Africa, are mostly aromatic, also *Cotula* from almost all the warm regions of the globe. But the most celebrated plants of this group belong to *Artemisia*, more than thirty species[1] of which are used as medicines; in the first line the common Wormwood[2] (fig. 116, 117); *A. vulgaris*,[3] the virtues of which as an emmenagogue and vermifuge are known throughout the world; the Tarragon[4] (fig. 115), which is chiefly a condiment, and the *Artemisias semen-contra*, which appear to be chiefly *A. maritima*,[5] and secondarily *A. Cina*,[6] *monogyna*,[7] *pauciflora*,[8] *Lercheana*,[9] *ramosa*,[10] &c.[11] Properties similar to those of Wormwood[12] are observed in the Southernwood[13] (Old Man) of our gardens, and in the *Genipis*, among which are ranged some Achilleæ, whilst the G. proper are *Artemisia spicata*,[14] *glacialis*[15] and *Mutellina*.[16] The Moxa plant of the Chinese is also an

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[1] Rosenth. *Syn.* 284, 1107.

[2] *Artemisia Absinthium* L. *Spec.* 1188.—Gren. et Godr. *Fl. de Fr.* ii. 126.—Mér. et Del. *Dict. Mat. méd.* i. 447.—Guib. *Drog. simpl.* éd. 7, iii. 45.—Caz. *Pl. méd. indig.* éd. 3, 1.—Berg et Schm. *Darst. off. Gew.* t. 22 *b.*—Bentl. and Trim. *Med. pl.* iii. n. 156.—H. Bn, *Dict. encycl. sc. méd.* i. 206.—*Absinthium officinale* Gærtn. *Fruct.* ii. 393, t. 164 (*Grande Absinthe*, *Absinthe-menu*, *A. amère*).

[3] L. *Spec.* 1188.—Gren. et Godr. *Fl. de Fr.* ii. 129.—Guib. *loc. cit.* 43, fig. 577.—Berg et Schm. *Darst. off. Gew.* t. 22 *c.*—Caz. *Pl. méd. indig.* éd. 3, 81.—H. Bn, *Dict. encycl. sc. méd.* vi. 137.

[4] *Artemisia Dracunculus* L. *Spec.* 1189.—Guib. *loc. cit.* 38 (*Serpentine*, *Herbe dragon*).

[5] L. *Spec.* 1186.—Gren. et Godr. *Fl. de Fr.* ii. 135.—Caz. *Pl. méd. indig.* éd. 3, 431.—H. Bn, *Dict. encycl. sc. méd.* i. 208. This species is probably the most active of those of our country as a vermifuge.

[6] Berg et Schm. *Darst. off. Gew.* t. 29 *c*, L.—Guib. *Drog. simpl.* éd. 7, iii. 40.

[7] W. et Kit. *Pl. rar. hung.* i. 177, t. 75.—DC. *Prodr.* vi. 102, n. 54.—*A. salina* Schult.

[8] Stechm. *Art.* 26, n. 21 (not Bieb.).—DC. *Prodr.* n. 52.—*A. pulchella* Gmel. With many authors it is simply a var. of *A. maritima*. This and the preceding are generally considered the plants producing the semen-contra of Russia.

[9] Stechm. *Art.* n. 18.—Kar. et Kir. ex Fluck. and Hanb. *Pharmacogr.* 346.—DC. *Prodr.* n. 62.—*A. maritima* var. *Stechmanniana* Bess. *Bull. nat. Mosc.* (1834), 31 (*Semen Santonicæ*, *Semen Cinæ*, *Semen sanctum*, *Semencine*, *Barbotine*).

[10] Sm. *Buch Canar.* 148.—DC. *Prodr.* n. 49. This species furnished (Berg et Schm.) the semen-contra of Barbary.

[11] *A. Vahliana* Kostel. *Med. Fl.* i. 698.—Berg et Schm. *Darst. off. Gew.* t. 29 *c*, A–K. (*Artemisia Contra* Vahl, not L.), has long been held to yield the semen-contra of the Levant. *A. judaica*, *Sieberi*, have also been indicated as the source, but they have not exactly the characters. *A. santonica*, *gallica*, *campestris*, *Absinthium*, and especially *maritima*, produce an indigenous semen-contra.

[12] *Artemisia Abrotanum* L. *Spec.* 1185.—Murr. *App. med.* i. 179.—DC. *Prodr.* n. 84.—Guib. *loc. cit.* 43 (*Aurone mâle*). The name *Aurone mâle* has also been given to *A. procera* W. and *paniculata* Lamk.

[13] *Artemisia pontica* L. *Spec.* 1187.—Jacq. *Fl. austr.* t. 99.—DC. *Prodr.* n. 90.—Mér. et Del. *Dict. Mat. méd.* i. 451.—Guib. *loc. cit.* 44, fig. 378.—H. Bn, *loc. cit.* 207 (*Petite Absinthe*, *A. romaine*, *Serkis*).

[14] Wulf. *Jacq. Fl. austr.* App. 46, t. 34.—Gren. et Godr. *Fl. de Fr.* ii. 130.—Guib. *loc. cit.* 46.—*A. Boccone* All.—*Absinthium spicatum* Baumg. (*Génipi noir*).

[15] L. *Spec.* 1187.—Gren. et Godr. *Fl. de Fr.* ii. 128.—Guib. *loc. cit.* 45, fig. 579.—*Absinthium glaciale* Lamk, *Ill.* t. 695, fig. 2.—*A. congestum* Lamk (*Génipi vrai*).

[16] Vill. *Dauph.* iii. 244, t. 35.—Gren. et Godr. *Fl. de Fr.* ii. 128.—Guib. *loc. cit.* 46

Artemisia[1] covered with a white down. It is in the various species of *Artemisia*, and particularly in those so frequently employed under the name of Absinths, that the properties of the group of Compositæ distinguished under the name of Artemisiæ[2] are most clearly characterized. Many of these plants have a very strong odour, and often also an intolerable bitterness. On distillation they yield an abundant essence, often green, generally very acrid and burning. That of the Great Absinth, which may be considered the type, is described by many authors as an intoxicant by itself, independently of the alcoholic liquor with which it is mixed. It is true these liquors are often adulterated, and in such cases contain in addition salts of copper, antimony, &c. But the addition of the absinth essence to alcohol renders it more noxious than brandy, and converts it into a special poison of the nervous system.

The properties of *Ambrosia* approach very near those of *Artemisia*. The infusion of *A. maritima*[3] (fig. 118–123) is a tonic, stimulant and antihysteric. *A. trifida* L. and *elatior* L. have the same properties. In Egypt *A. villosissima* FORSK. is used in the treatment of ophthalmia, and in the Antilles *A. artemisiæfolia* L. is extolled as a remedy for fever, gout, worms, flux. *Iva frutescens*[4] is a febrifuge in N. America. *Xanthium* yields esteemed medicines in both hemispheres. There is a *X. catharticum* K. in Peru; but *X. orientale*[5] (fig. 124–131), *strumarium*,[6] *echinatum*[7] are astringent, bitter, antiscrofulous; they are also especially employed in chronic cutaneous affections. They are used to dye yellow, and the Romans are said to have coloured their pale blonde hair with the leaves of *X. strumarium*. *X. spinosum*[8] has been used as a tonic and febrifuge; it is at times extolled against madness.

(*Génipi blanc*). There are liquors called Swiss Absinth, which owe their properties to Genipi and not to *Artemisia Absinthium*. This, formerly at least, did not enter into their composition.

[1] Either *A. chinensis* L. or *A. Moxa* LINDL. (GUIB. *loc. cit.* 48).

[2] "Inter medicinas roborantes amaro-aromaticas *Artemisiæ* imprimis nominandæ sunt, vastum plantarum genus et late per terrarum orbem diffusum, cujus plures species ab antiquissimis temporibus in medicorum penu habentur." (ENDL. *Enchir.* 252.)

[3] L. *Spec.* 1481.—DC. *Prodr.* v. 525, n. 1.—H. BN, *Dict. encycl. sc. méd.* iii. 552.

[4] L. *Amœn. acad.* iii. 25.—GÆRTN. *Fruct.* ii. t. 164.—LAMK, *Ill.* t. 166, fig. 2 (*Quinquina of Mexico, Marsh Elder*).

[5] L. F. *Dec.* 33, t. 17 (part.).—*X. macrocarpum* DC. *Fl. fr.* Suppl. 356; *Prodr.* v. 523, n. 1.

[6] L. *Spec.* 1400.—LAMK, *Ill.* t. 765, fig. 1.—DC. *Prodr.* n. 3.—GREN. et GODR. *Fl. de Fr.* ii. 393.

[7] MURR. *Comm. gœtt.* (1784), c. ic. Form (?) of *X. macrocarpum*.

[8] L. *Spec.* 1400.—LAMK, *Ill.* t. 765, fig. 4.—GREN. et GODR. *Fl. de Fr.* ii. 394.

We can only enumerate the various genera of this family which furnish our gardens with ornamental species. Every one is acquainted with the Sunflower (fig. 66–70), the Dahlia (fig. 73, 74), *Cosmos* and *Coreopsis*, Marigold (fig. 59–63), Groundsel, *Ageratum*, *Helenium* (fig. 87–89), *Tagetes* (fig. 96), Everlasting, *Bellis* (fig. 51), *Aster*, Chrysanthemum, *Zinnia*, *Rudbeckia*, *Gaillardia* (fig. 90–93), Centaury, some *Jurinœa*, *Xeranthemum*, *Echinops*, *Athanasia*, *Santolina*, *Achillea*, &c., &c.

Now that horticultural industry adds to the old plants which ornamented the gardens of our forefathers, an ever-increasing number of novelties, drawn principally from the temperate regions of the two Americas, Japan, Australia and the Cape, many Compositæ with graceful capitules, or of brilliant colour, make their appearance in our gardens. *Arctotis*, *Gorteria*, sections of *Gazania* and *Venidium* form elegant masses; *Stobœa purpurea* (*Berkheya*) is also sometimes seen. *Dimorphotheca pluvialis* is cultivated as a curious plant on account of the way in which its capitules are affected by moisture. Some splendid climbing *Mutisias* are to be seen in our warm and temperate conservatories. *Barnadesia rosea* (fig. 25, 26) flourishes almost perpetually in the latter; *Stiftia chrysantha* is the most brilliant of the cultivated Mutisieæ. *Moscharia rosea* is sown as an annual. *Helichrysum* of the section *Rhodanthe*, particularly *H. Manglesii*, is one of the most elegant Everlastings introduced into our gardens, and has already produced several remarkable forms. *H.* (*Acroclinium*) *roseum* has capitules still more beautiful. *H.* (*Ammobium*) *alatum*, a fine Australian species the inflorescence of which is white, is often met with. *Vernonia* with violet flowers, perennial species, wild in our country, produce a fine effect by their tall erect stems and numerous capitules. *Liatris* (*Kuhnia*) from N. America is equally remarkable for its spike-like inflorescence. *Adenostyles* especially by their habit and rich foliage produce a grand effect, as do several *Polymnias*, some *Montanoas*, and particularly *Podachœnium eminens*, with its large ornamental leaves remarkable for their apple-like odour. Among the smaller species with rich floration must be mentioned *Shortia californica*, *Sanvitalia procumbens*, *Cosmidium Burridgeanum*, *Hysterionica* of the section *Grindelia* (fig. 54), *Brachycome iberidifolia*, *Centauridium Drummondii*, *Podolepis chrysantha*, *Guttierezia gymnospermoides*, *Sphenogyne speciosa*, *Kaulfussia amelloides*, plants the seeds of which are found in commerce at the present day. Several shrubby *Olearias* from Australia and New Zealand adorn our cool houses in winter. There are some pretty open-air ornamental *Erigerons* and fine perennial *Solidagos*, particularly those from N. America. Some perennial *Verbesinas* are fine ornamental plants which bear well our winters. *Villanova chrysanthemoides* is another. Besides the variations of colour continually obtained in the corolla, which often gives great interest to these plants from an horticultural ornamental point of view, it is known that the regular flowers of the Compositæ are often transformed under culture into flowers with irregular corollas or demi-florets, and reciprocally ligulate flowers into flowers with a regular tubular corolla. In the Corymbifers, that is plants in which the discal flowers are regular and the radial ligulate, it not unfrequently happens that either all the flowers become regular, or all acquire ligulate corollas. Thus the Marguerite (*Bellis perennis*) and the Reine Marguerite (*Callistephus chinensis*) may have all their corollas open with unilateral limb, or all tubular and similar to those of the disk, only that they are larger, and instead of remaining yellow, they are coloured pink, violet or white. The numerous varieties of Dahlia cultivated, which have been derived during the present century from two species originally introduced from America and Spain, have naturally two kinds of flowers: those of the centre all yellow and with a small regular corolla, and those of the circumference few in number and furnished with a coloured and open corolla. In the choice horticultural varieties, all the corollas may become ligulate and tinted in brilliant shades. But besides these pretended *double* flowers of Compositæ, which are true inflorescences, there are branched capitules, that is, the principal axis, instead of bearing the flowers, bears secondary axes more or less elongate, each terminated by a small capitule. This is particularly the case in the garden Marguerites with proliferous capitules called Mères de famille. Many Composites, moreover, owe the beauty of their capitules, not to the florets or demi-florets, which are little visible and of inconspicuous colour, but to the involucral bracts which, in certain horticultural varieties, acquire a large development and assume a petaloid colour and consistence. Besides species of fetid odour, there are some genera, as *Tagetes*, which include plants with an aniseed and agreeable perfume. The Cichorieæ are generally inodorous. In South America and South Africa there are Senecios with extremely odorous leaves. The odour of Baume Coq (*Chrysanthemum Balsamita*) is, we have seen, one of the most pronounced known among the Composites of our gardens, while there are many sweet-smelling Artemisias and Matricarias, and others with a strong and disagreeable odour. The most common *Tarchonanthus* owes its specific name to its camphor-like odour, which is also found in some Asiatic *Plucheas*, and *Eurybia argophylla* is specially cultivated in our cool houses for its leaves of musk-like odour.

LXVII. CAMPANULACEÆ.

I. CAMPANULA SERIES.

Campanula Medium.

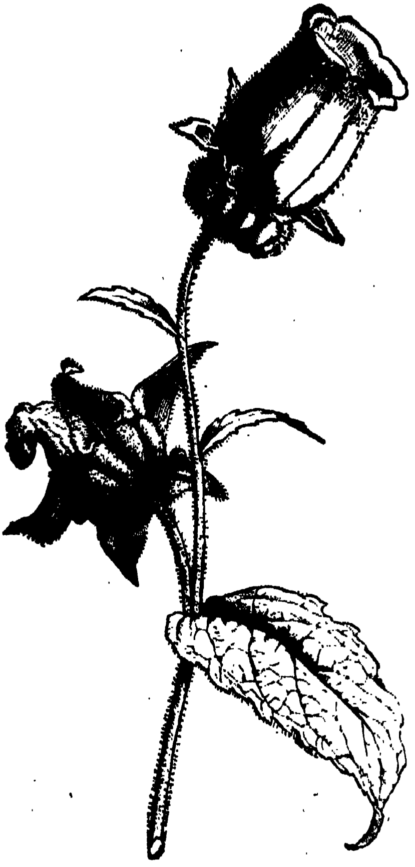

Fig. 132. Floriferous and fructiferous branch (½).

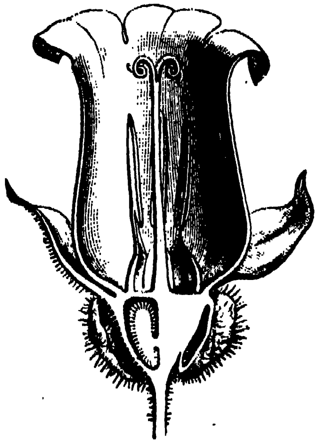

Fig. 133. Long. sect. of flower.

The flowers of *Campanula*[1] (fig. 132-145) are hermaphrodite, regular and oftener pentamerous. This number is observed in all the floral verticils of certain species, such as *C. Medium* L. (fig. 132, 133), of which a separate genus has been made.[2] The receptacle is concave, in the form of a hemispherical, obconical or obovoid sac. The ovary is therein lodged, and its margins bear a gamosepalous calyx, the imbricated or valvate divisions of which are often united in the lower part and reflexed at the level of the hollows of separation.[1] The corolla is superior, bell-shaped, gamopetalous, regular, with valvate lobes alternating with the divisions of the calyx. The andrœcium consists of five stamens, said to be epigynous, alternating with the divisions of the corolla. The filaments are inserted, not upon the latter, but, like it, upon the receptacle. They are free, dilated in their lower portion, consequently valvate in the bud, and attenuated above, where they are inserted near the base of the anthers which are bilocular, introrse, dehiscing by two longitudinal clefts,[2] and contiguous but not adherent at the margins. The gynæcium is composed of an inferior ovary, with five oppositisepalous cells,[3] the summit, nearly flat, covered with a very thin layer of glandular tissue, and surmounted by a style with branches at first contiguous,[4] then recurved or revolute, stigmatiferous within and charged externally with collecting hairs.[5] In the internal angle of each cell is found a thick placenta, more or less contracted at its insertion and charged externally with numerous anatropous ovules.[6] The fruit is a capsule crowned by the remains of the calyx and opening by

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[1] T. *Inst.* 108, t. 37.—L. *Gen.* n. 218.—ADANS. *Fam. des pl.* ii. 134.—J. *Gen.* 164.—LAMK, *Dict.* ii. 577; Suppl. i. 54; *Ill.* t. 123.—GÆRTN. *Fruct.* t. 33.—ENDL. *Gen.* n. 3085.—A. DC. *Monogr. des Campanulées* (1830), 213; *Prodr.* vii. 458.—PAYER, *Organog.* 642, t. 149.—H. BN, *Payer Fam. nat.* 250.—B. H. *Gen.* ii. 561, n. 49.—*Roucela* DUMORT. *Comm. bot.* 14.—*Erinia* NOUL. *Fl. s.-pyren.* 407.—*Depierrea* Anon. *Linnæa*, xvi. (1842), 374 (monstrous form of a Campanula).

[2] *Medium* T. *Elem. bot.* i. 90, t. 38.—*Marianthemum* SCHR. *D. Regensb. Ges.* i. (ex DC.).—*Quinquelocularia* C. KOCH, *Linnæa*, xxiii. 630.

Campanula Rapunculus.

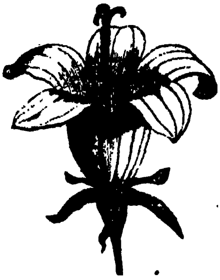

Fig. 134. Flower.

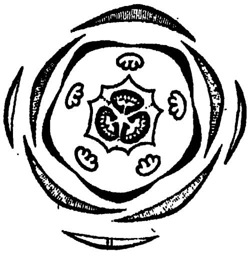

Fig. 135. Diagram.

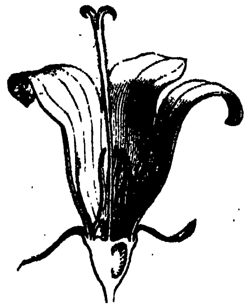

Fig. 136. Long. sect. of flower.

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[1] These are decurrences from the base of the sepals united in auricles descending and forcibly alternate, consequently, with the five normal divisions of the calyx. The margins are more or less recurved below.

[2] The pollen is "spherical, punctuated, partly covered with small spines," and has three to five pores at its equator. It is similar, with four pores, in *Phyteuma*; whilst in *Canarina* it is ovoid, with three bands each bearing an umbilicus. (H. Mohl, *Ann. sc. nat.* sér. 2, iii. 316.)

[3] They correspond also to the salient angles of the ovary.

[4] Flattened, they are marginally contiguous and thus form an elongate cavity.

[5] These are charged with the pollen of the anthers before the opening of the corolla, whilst the style, at first short, traverses, in lengthening, the tube which they form by their contiguity.

[6] With a single envelope.

triangular or oval pannels between ridges more or less prominent,[1] to allow the escape of an indefinite number of seeds furnished with a fleshy albumen which surrounds an axile or more or less elongated embryo.

In most Campanulas, such as *C. Rapunculus* (fig. 134–139),[2] the appendages of the calyx disappear, generally entirely, and the ovary has only three cells, the two lateral being absent. Not unfrequently this ovary, as well as the fruit, is free in the upper part, which surmounts the calyx in the form of an elliptic cone and perhaps covered with a layer more or less thick of glandular tissue, the rudiment of an epigynous disk. Some eastern Campanulas, the anthers of which, instead of being free, are more closely connate and form a tube around the style, have been generically distinguished under the name of *Symphyandra*.[3]

Campanula Rapunculus.

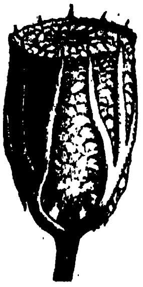
Fig. 137. Fruit after dehiscence ($\frac{3}{1}$).

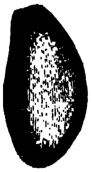
Fig. 138. Seed ($\frac{10}{1}$).

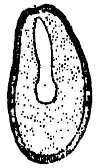
Fig. 139. Long. sect. of seed.

There are some ten others, of western Europe and temperate Asia, the flowers of which are the same, but the trimerous ovary is surmounted by an epigynous disk in the form of a cup, a tube or a cone, sometimes very elevated (fig. 140); of these a genus *Adenophora*[4] has been formed.

Campanula (Adenophora) coronata.

Fig. 140. Style and disk.

Four other eastern species, the flowers of which are 7–10-merous in all their verticils instead of pentamerous, with petals little united or free, have been distinguished as a genus *Mindium*.[1]

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[1] In many Campanulas the parenchyma between the nervures of the pericarp is early destroyed; so that the latter may present (fig. 137) a sort of complicated network, on which the larger nervures are projected in a variable form according to the species. The same may be observed in *Phyteuma*, &c.

[2] Sect. *Eucodon* A. DC.

[3] A. DC. *Monogr. Camp.* 365, t. 8; *Prodr.* vii. 494.—Endl. *Gen.* n. 3089.—B. H. *Gen.* ii. 563, n. 52.

[4] Fisch. *Mém. Mosc.* vi. 165.—A. DC. *Monogr. Camp.* t. 6; *Prodr.* vii. 492.—Endl. *Gen.* n. 3088.—B. H. *Gen.* ii. 563, n. 51.—*Floerkea* Spreng. *Anleit.* ii. 523 (not W.).

In the northern hemisphere of both worlds, and more rarely in the two Americas, there are seven or eight other Campanulas with a trimerous receptacle and ovary narrower and more elongate; these have been considered a separate genus under the names *Specularia*[2] (fig. 141–145) and *Githopsis*;[3] but like the preceding types, we regard them only as sections of the great genus *Campanula*.

Campanula (Specularia) Speculum.

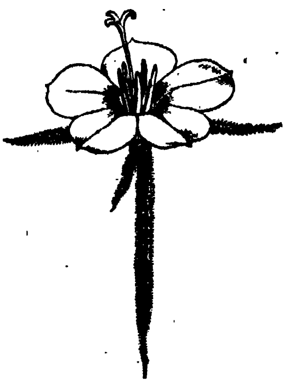
Fig. 141. Flower.

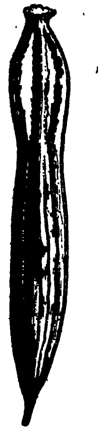
Fig. 143. Open fruit ($\frac{3}{1}$).

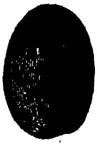
Fig. 144. Seed ($\frac{8}{1}$).

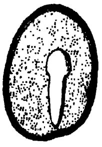
Fig. 145. Long. sect. of seed.

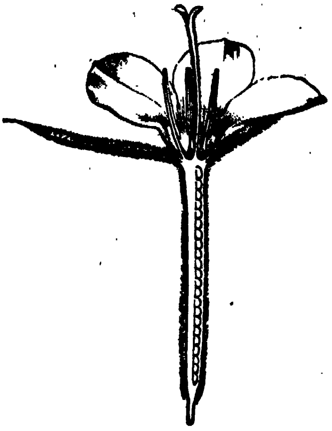
Fig. 142. Long. sect. of flower ($\frac{4}{1}$).

Thus constituted the genus comprises about 250 species[4] of annual or perennial herbs, the roots of which are sometimes thick and fleshy, and all parts gorged with a milky or viscous juice. The leaves are alternate, more rarely opposite or subverticillate, entire or dentate, glabrous, rough or hispid. The flowers[1] are axillar or terminal, solitary or united in simple groups or in groups of cymes. They grow in the temperate and warm regions of both worlds, principally in the northern hemisphere, and are especially abundant in the eastern Mediterranean districts of Europe and Asia.

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[1] ADANS. *Fam. des pl.* ii. 134.—J. *Gen.* 164.—*Michauxia* LHÉR. *Monogr. inéd.* (1788).—LAMK, *Ill.* t. 295 (not NECK., nor RŒUSCH.).—A. DC. *Monogr. Camp.* 211; *Prodr.* vii. 457.—GÆRTN. F. *Fruct.* iii. t. 211.—ENDL. *Gen.* n. 3084.—B. H. *Gen.* ii. 561, n. 47. The petals are often free to a considerable extent or even to the base; but in *Campanula* and *Wahlenbergia* observation of various species proves that in this group this character should not have a real generic value.

[2] HEIST. *Syst. pl.* 8.—A. DC. *Monogr. Camp.* 344; *Prodr.* vii. 489.—ENDL. *Gen.* n. 3086.—B. H. *Gen.* ii. 562, n. 50.—*Prismatocarpus* LHÉR. *Sert. angl.* 1 (part.).—*Apenula* NECK. *Elem.* i. 234.—*Lepouzia* DUR. *Fl. Bourg.* ii. 26 (ex A. DC.).—*Dismicodon* NUTT. *Trans. Amer. Phil. Soc.* ser. 2, viii. 255.—*Campylocera* NUTT. *loc. cit.* 257 (ex B. H.).

[3] Reference here is not to the genus of NUTTALL (*loc. cit.* 258), but to the plant cultivated under this name in the garden of Cambridge (Massachusetts) (H. BN, *Bull. Soc. Linn. Par.* 304); whilst the true *Githopsis* is placed by authors in another group of *Campanuleæ* on account of its fruit described as "dehiscing operculately between the lobes of the calyx." On the plant of which we speak, we have seen it open by pannels below the sepals.

[4] JACQ. *Fl. austr.* t. 118, 209, 285, 411; *H. schœnbr.* t. 335 (*Adenophora*), 336, 337; *Ic. rar.* t. 334.—WALDST. et KIT. *Pl. rar. hung.* t. 64, 136, 247, 258, 263.—VENT. *J. Cels*, t. 18; 81 (*Michauxia*).—SIBTH. et SM. *Fl. græc.* t. 116, 203–205, 207–215.—LABILL. *Pl. syr. Dec.* t. 3–5.—LEDEB. *Ic. Fl. ross.* t. 209.—DESF. *Ann. Mus.* xi. t. 6, 7, 16; *Fl. atlant.* t. 50, 51.—TEN. *Fl. nap.* t. 16–18; 19, 20 (*Prismatocarpus*), 119, 120, 210, 224.—BIEB. *Cent. pl. ross.* t. 10, 16, 42.—VIS. *St. dalmat.* t. 14; Suppl. t. 6.—REICHB. *Icon. Fl. germ.* t. 1591–1615; 1616,

Wahlenbergia Sieberi.

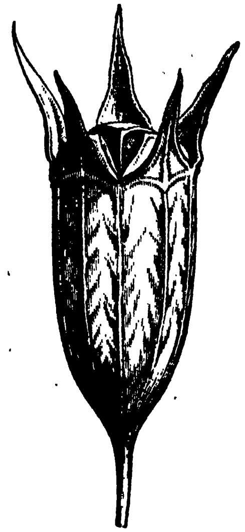

Fig. 146. Dehiscent fruit ($\frac{10}{1}$)

Wahlenbergia (fig. 146) consists of gamopetalous or polypetalous Campanulas, with non-adherent anthers, the capsular fruit of which opens at the top, within and above the calyx, by short clefts which separate the upper triangular pannels, in number varying from two to five. When they are of the same number as the sepals, these pannels alternate with them. They are plants of very variable habit from all warm and temperate regions of the world.

The valves of the fruit, also separating above the calyx, are, on the other hand, superposed to the sepals in *Microcodon* and *Platycodon*. The former,

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1617, fig. 2 (*Specularia*), 1618 (*Adenophora*); *Icon. bot.* t. 77, 78, 85, 111, 112, 202, 320, 507–510, 551–560, 571–575; *Icon. exot.* t. 2, 15, 23 (*Adenophora*).—Salisb. *Par. lond.* t. 26, 80, 108, 160 (*Adenophora*); 252, 256, 333, 409. —Sweet, *Brit. fl. Gard.* t. 280; ser. 2, t. 66 (*Symphyandra*).—R. et Pav. *Fl. per. et chil.* t. 200, fig. b.—Jaub. et Sp. *Ill. pl. or.* t. 233, 391, 392, 421, 422. — Tchihatch. *As. Min.* t. 35.—Dur. *Expl. Alg.* t. 62.—Hook. *Icon.* t. 684, 762; *Fl. bor.-amer.* t. 125.—Brot. *Phyt. lusit.* t. 18–20.—Hffmsg et Link, *Fl. port.* t. 79–83.—H. B. K. *Nov. gen. et spec.* t. 265.—Torr. *Fl. N. York*, t. 65.—Miq. *Ann. Mus. lugd.-bat.* ii. 192 (*Adenophora*).—Wight, *Ill.* t. 136; *Icon.* t. 1177–1179.—Kl. *Pr. Wald. Reis. Bot.* t. 77, 78.—Boiss. *Voy. Esp.* t. 120; *Fl. or.* iii. 890 (*Michauxia*), 892 (*Adenophora*), 893; 958 (*Specularia*).—Presl, *Symb.* t. 18 (*Wahlenbergia*).—A. Gray, *Syn. Fl. N.-Amer.* ii. 10 (*Specularia*), 11; 14 (*Heterocodon*).—. *Fl. S. Unit. St.* 265.—Hook. *Fl. lond.* t. 51.—Nees, *Amœn.* ii. t. 4.—Griseb. *Symbol. Fl. argent.* 219 (*Specularia*).—C. Gay, *Fl. chil.* iv. 341; 342 (*Specularia*).—Hemsl. *Oliv. Fl. trop. Afr.* 481.—Clke, *Hook. f. Fl. brit. Ind.* iii. 438.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 287; 296 (*Specularia*).—Gren. et Godr. *Fl. de Fr.* ii. 404 (*Specularia*), 406.—Andr. *Bot. Repos.* t. 385, 396.—*Fl. des serres*, t. 247, 563, 614, 699, 729, 1908.—*Bot. Reg.* t. 149, 236 (*Adenophora*), 237, 241, 620, 1738, 1768, 1995; (1843), t. 19; (1846), t. 65.—*Bot. Mag.* t. 102, 117; 219 (*Michauxia*), 397, 404, 512, 551, 650, 811, 912, 927, 957, 1257, 1258 1290, 1973, 2019, 2553, 2581, 2632, 2649, 2653, 3128 (*Michauxia*), 3347, 4555, 4748, 4879, 5068, 5745, 6394, 6504, 6588, 6590.—Walp. *Rep.* ii. 710; vi. 383; 387 (*Adenophora*); *Ann.* ii. 1044; 1050 (*Quinquelocularia*), 1051 (*Dysmicodon, Campylocera*), 1052 (*Adenophora*); iii. 918; v. 394; 402 (*Specularia*), 403 (*Symphyandra*).

[1] Blue, white, yellowish or violet, rarely pink.

which inhabit South Africa, are low annual herbs, the stamens of which have narrow filaments, and the corolla a thin tube. *Platycodon* (fig. 147), perennial herbs of Eastern Asia, have the corollas of *Campanula*, staminal filaments dilated at the base, and perennial stems with loose or one-flowered terminal cymes. *Codonopsis* is *Platycodon* with twining or creeping stems and large stylary divisions, also inhabiting temperate Asia.

Platycodon grandiflorum.

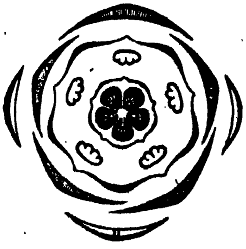


Fig. 147. Diagram.

The floral receptacle, in this family as in many other natural groups, presents enormous variations in its configuration. Thus we know that in certain species of *Codonopsis* and *Wahlenbergia*, instead of a deep sac containing the whole of the ovary or nearly so, it represents only a shallow cupule in the hollow of which is lodged only the base of the ovary. In *Cyananthus* (fig. 148, 149), herbs from the mountains of India and neighbouring regions, which may be considered as Campanulas with a free ovary, the summit of the receptacle being scarcely depressed, the perianth and andrœcium become almost completely hypogynous.

Cyananthus lobatus.

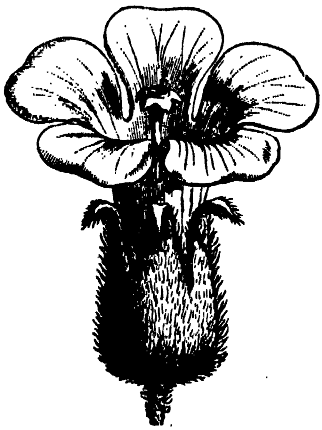


Fig. 148. Flower ([illegible]).

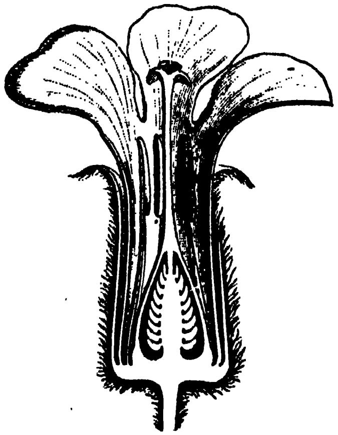
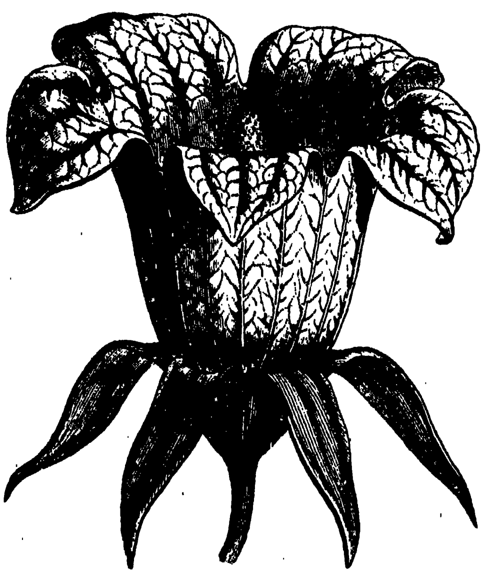


Fig. 149. Long. sect. of flower.

Campanumœa, Asiatic herbs, the receptacle of which is shallow and the corollas often inserted at a distance from the calyx, are otherwise *Codonopses* with a fleshy fruit.

Canarina campanulata (fig. 150), a perennial herb of the Canary

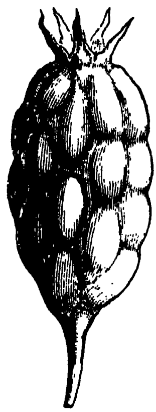
Isles, the slender stems of which bear opposite leaves, has solitary, yellowish, 5–6-merous flowers which closely resemble certain Cucurbitaceæ, and a fleshy fruit crowned with the persistent calyx. *Peracarpa* (fig. 151), a small fleshy Himalayan herb, has nearly the same fruit, but of small dimensions, and furnished with a thin pericarp under which numerous seeds are seen projecting.



Canarina campanulata.

Fig. 150. Pentamerous flower.

Trachelium and *Phyteuma* have the capsular fruit of the true Campanulas. The former, natives of the Mediterranean region, have a capsule opening near the base by two or three small valves. The corolla is contracted below in a slender tube, and the flowers are united in very compound corymbiform cymes. *Phyteuma*, found in the same regions, in the East and in temperate Europe, has also two or three lateral valves in the capsule; and the divisions of the corolla, free or nearly so throughout their whole extent, are contracted in the upper portion, in consequence of which they adhere for a long time in the bud. The general inflorescence has ordinarily the form of a spike or capitule, sometimes of a corymb or umbel; but the partial inflorescences of which they are composed are either cymes with short pedicels or true glomerules. Sometimes the flowers are solitary and terminal.



Peracarpa carnosa.

Fig. 151. Fruit ($\frac{3}{1}$).

Pentaphragma (fig. 152–154) was formerly referred to the genus *Phyteuma*, of which it has the floral symmetry, with fine obtuse sepals and a campanulate, valvately induplicate corolla. The five stamens, non-adherent to the corolla, have anthers marginally connate in a tube. But the inferior fruit is a polyspermous berry with 3–5 cells. The only species known is a perennial herb with alternate completely unsymmetrical leaves, and flowers united in a singular terminal or lateral pedunculate inflorescence having a sympodic contracted ovoidly curved axis, and on its convexity two parallel series of nearly sessile flowers, accompanied by an equal number of lateral bracts. This curious plant inhabits the Indian Archipelago.

Pentaphragma begonioides.

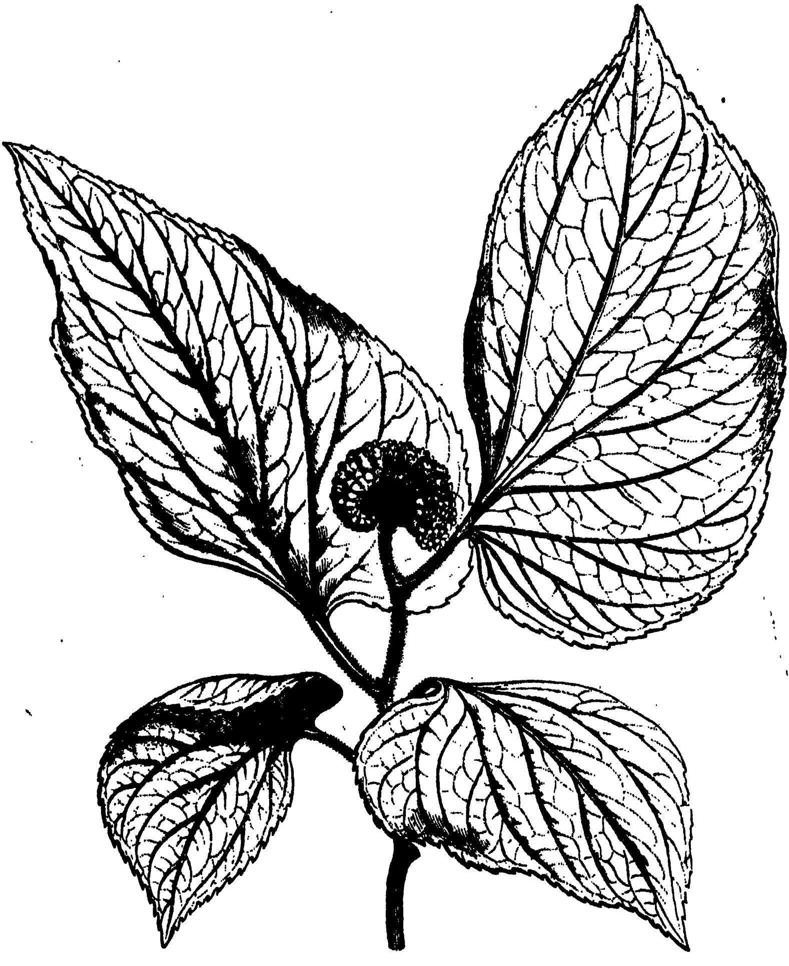


Fig. 152. Flowering branch.

Musschia (fig. 155), large herbs or undershrubs from Madeira, are also closely allied to the Campanulas, with five ovarian cells and a dry fruit traversed by thick vertical nervures, five of which are prolonged in the persistent sepals. At maturity the portions of the receptacle between these nervures, which are thin and fragile, burst across in the direction of a certain number of parallel fissures by which the seeds escape.

Pentaphragma begonioides.

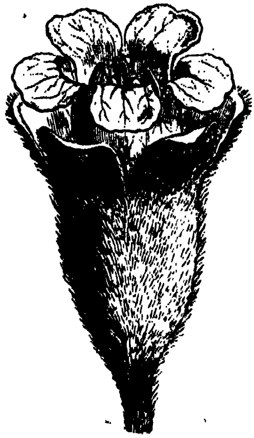


Fig. 153. Flower ($\frac{10}{1}$).

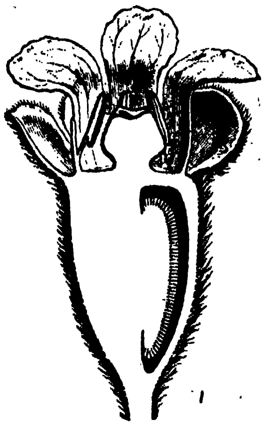


Fig. 154. Long. sect. of flower.

Roella, growing in South Africa, has also the flowers of *Campanula*, with a dry fruit opening like that of *Wahlenbergia*, or of which the summit is raised like an operculum. Occasionally longitudinal clefts are at the same time produced below the insertion of the sepals. They are small herbs or oftener undershrubs, with ericoid foliage, the flowers of which, terminal, solitary, or glomerulous, are surrounded by the upper leaves forming a sort of involucre. *Prismatocarpus*, perennial or subshrubby herbs from the same regions (not to be confounded with *Specularia* of our country which has received the same name), have nearly all the floral characters of *Roella*; but the capsular and bilocular fruit opens lengthwise by clefts, in narrow valves which finally separate throughout their entire length. Near these are placed the true *Githopsis* and the imperfectly known genera *Rhigiophyllum* and *Treichelia*, belonging to the same country, which

Musschia Wollastoni.

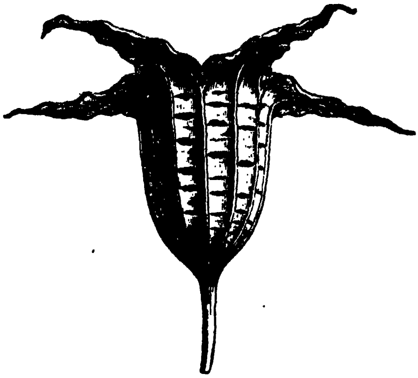


Fig. 155. Dehiscent fruit.

are said to have, the former a three-celled fruit, a rigid woody stem, with capitate flowers, and the latter a globular capsular fruit, opening above the calyx by an operculum carrying with it the partition, with a small herbaceous annual stem and capitate flowers.

Siphocodon, a small plant nearly leafless, from the same region, has a capsular fruit opening transversely, but below the calyx, and the stamens are inserted higher in the tube of the corolla.

Jasione montana.

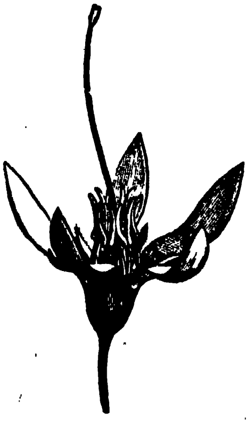


Fig. 156. Flower ($\frac{3}{1}$).

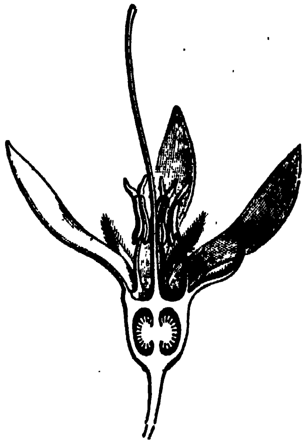


Fig. 157. Long. sect. of flower.

Jasione (fig. 156, 157) comprises Campanulas with the capsule of *Wahlenbergia*, which inhabit temperate Europe and the whole Mediterranean region ; their small and numerous flowers are united in capitules or umbels. In this case they have short pedicels; and their petals, almost entirely free, are independent of the free stamens, except quite at the base of their filaments.

Merciera consists of Campanulas with reduced flowers as to the gynœcium. The inferior ovary has primarily two cells ; but the dividing partition is more or less incomplete ; and in each cell there are only two collateral ascending ovules inserted very near the base, anatropous with inferior micropyle. The fruit is dry and most frequently indehiscent. They are low shrubs or undershrubs of South Africa, with small leaves often rigid and narrow, small solitary flowers, sessile or nearly so, forming a sort of terminal spike where the upper leaves of the branches are reduced to the condition of bracts.

II. SPHENOCLEA SERIES.

Sphenoclea[1] (fig. 158–161) has often been relegated to a small separate group. The flowers are hermaphrodite, regular and generally pentamerous. The concave, obconically depressed re-

Sphenoclea zeylanica.

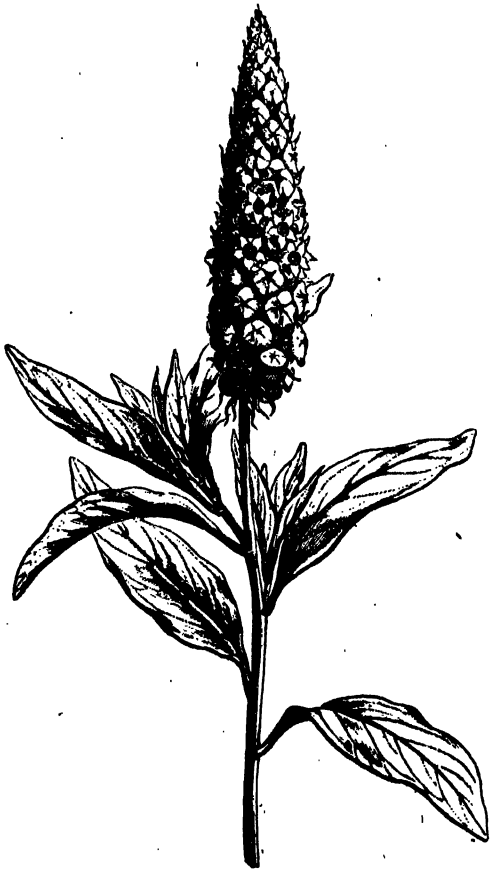


Fig. 158. Floriferous branch.

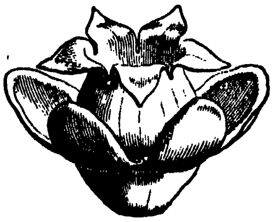


Fig. 159. Flower (⁴⁄₁).

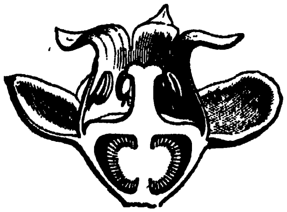


Fig. 160. Long. sect. of flower.

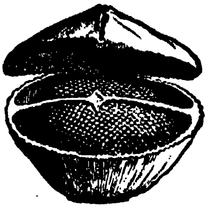


Fig. 161. Dehiscent fruit.

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[1] GÆRTN. *Fruct.* i. (1788), 113, t. 24.—RŒM. et SCH. *Syst.* iv. 354.—A. DC. *Prodr.* vii. 548. —B. H. *Gen.* ii. 560, n. 45.—*Pongatium* J. *Gen.* 423.—ENDL. *Gen.* n. 3092.—J.-G. AG. *Theor. Syst. plant.* 340.—*Gærtnera* RETZ. *Obs.* vi. 24 (not LAMK, nor NECK., nor SCHREB., nor WALL.). — *Rapinia* LOUR. *Fl. cochinch.* (ed. 1790), 127.

ceptacle is filled by the inferior ovary. Its margin bears five sepals, at first quincuncially imbricate, and a small campanulate corolla with five lobes imbricate in the bud. On the corolla are inserted five alternate enclosed stamens with short filaments and bilocular introrse anthers. The inferior ovary is surmounted by a style stigmatiferous at the extremity, slightly enlarged and shortly bilobed; in each ovarian cell there is a thick placenta charged with a considerable number of small anatropous ovules. The fruit is a bilocular capsule which, at maturity, opens transversely by an operculum. The seeds, numerous, enclose an axile embryo surrounded by a fleshy albumen.

Sphenoclea comprises annuals of the habit of *Phytolacca*, and are found in marshy places in all tropical regions. The leaves are alternate and entire, and the small flowers[1] united in simple or rarely compound spikes, terminal or lateral. Each situated in the axil of a bract is accompanied by two lateral sterile bracteoles. It is now generally agreed to admit this genus only as a species very variable in form.[2]

III. LOBELIA SERIES.

The Lobelias[3] (fig. 162–169) are Campanulaceæ with irregular and resupinate flowers. The superior perianth is composed of a calyx of five sepals, free or nearly so, one of which is anterior, two lateral and two posterior, with a valvate prefloration or none; and a gamopetalous or nearly polypetalous corolla,[4] irregular, with five divisions alternating with the sepals, valvate. The stamens, inserted like the corolla, have filaments alternating with its divisions and more or less united with it and also marginally with each other,[1] separating at a certain height; and bilocular, introrse, equal or unequal anthers,[2] dehiscing by two longitudinal clefts, sometimes with accessory appendages, and also marginally united.[3]

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[1] Not showy, greenish or yellowish.

[2] *S. zeylanica* GÆRTN. *loc. cit.* fig. 5.—W. *Spec.* i. 927.—WIGHT, *Ill.* t. 139.—A. GRAY, *Syn. Fl. N.-Amer.* ii. 10.—BOISS. *Fl. or.* iii. 963.—CLKE, *Hook. Fl. brit. Ind.* iii. 437.—HEMSL. *Oliv. Fl. trop. Afr.* iii. 481.—*S. Pongatium* A. DC.—*Pongatium indicum* LAMK, *Ill.* i. n. 1991.—GRISEB. *Fl. brit. W.-Ind.* 389.—*Gærtnera Pongati* RETZ.—*Rapinia herbacea* LOUR.—*Pongati* RHEED. *Hort. malab.* ii. 47, t. 24.

[3] *Lobelia* L. *Gen.* n. 1006.—ADANS. *Fam. des pl.* ii. 157.—J. *Gen.* 165.—LAMK, *Dict.* iii. 581; *Suppl.* iii. 483; *Ill.* t. 724.—A. DC. *Prodr.* vii. 357.—ENDL. *Gen.* n. 3058.—PAYER, *Organog.* 644.—H. BN, *Payer Fam. nat.* 248.—B. H. *Gen.* ii. 551, n. 18.—*Rapuntium* T. *Inst.* 163, t. 51.—GÆRTN. *Fruct.* i. 151, t. 30.—*Dortmannia* NECK. *Elem.* i. 132.—*Stooria* NECK.—*Ymnostema*, NECK.—*Juchia*, NECK. *loc. cit.*

[4] We shall see that very often, when the petals are described as united, they can be easily separated without tearing even to the base. This separation is often more easily and spontaneously effected along the middle line of the two anterior sepals, and it is chiefly there that it has attracted the attention of botanists.

Lobelia syphilitica.

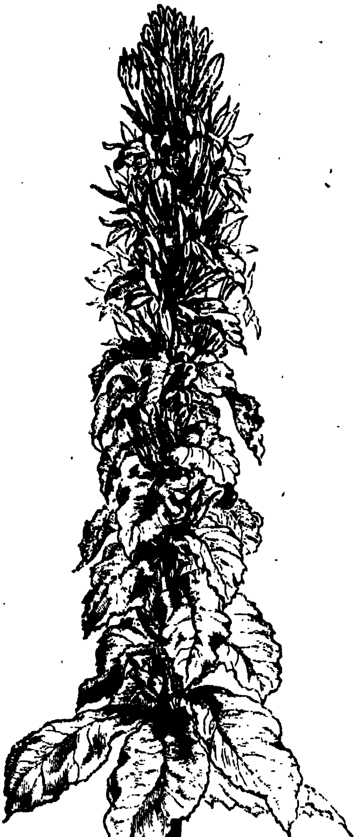

Fig. 162. Flowering branch.

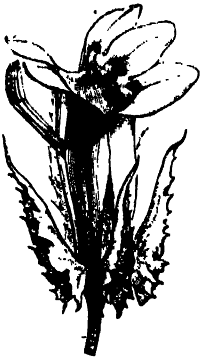

Fig. 163. Flower (⅘).

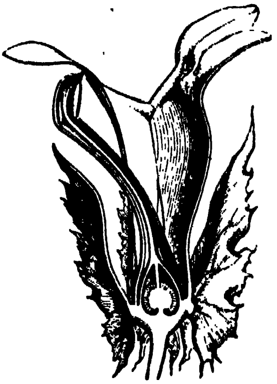

Fig. 165. Long. sect. of flower.

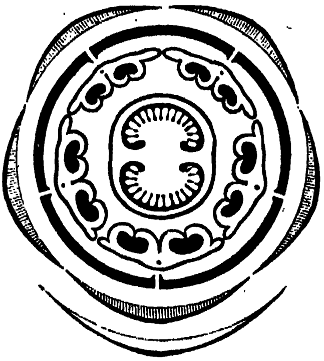

Fig. 164. Diagram.

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[1] In this respect they resemble the petals; but their independence at the base clearly proves that they are not truly gamophyllous.

[2] The two posterior are shorter than the three others. The summits of the latter are therefore more elevated and often form a sort of hood over the mass of anthers. The consequence is that the apical opening of this mass is situated, not quite at the top, but on the posterior side of the flower. This opening may have bare margins, but more frequently it is furnished with hairs borne on the summit of the anthers. It is the two shorter that are generally thus crowned, either with two hairs or a pencil or fringe of hairs more or less developed. We could not base generic characters on these organs.

[3] The pollen is "ellipsoid; three folds; in water a sphere with three bands" (H. Mohl, *Ann. sc. nat.* sér. 2, iii. 316).

The ovary, wholly inferior or free for the greater part, is bilocular with axile placentas, charged with anatropous ovules. The summit of the ovary, often free,[1] is extended in a hollow style occupying the centre of the tube formed by the stamens, and terminating in two branches of variable form and length, sometimes reduced to two small lips the base of which is surrounded by a collarette of long papillæ (fig. 169). The fruit is a capsule, often furnished with the persistent calyx and opening above to a variable extent, following the loculicidal dehiscence, to allow the escape of numerous seeds, with axile or excentric embryo, surrounded by a fleshy albumen. The Lobelias are shrubby, subshrubby, almost arborescent, or oftener herbaceous plants, very variable in habit, and their different parts generally gorged with a milky juice. The flowers[2] are axillar and solitary, or in terminal clusters, when at the summit of the stems the axillate leaves are replaced by bracts.

Lobelia syphilitica.

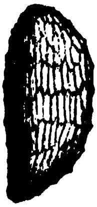

Fig. 167. Seed ($\frac{8}{1}$).

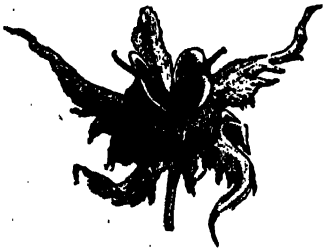

Fig. 166. Dehiscent fruit ($\frac{2}{1}$).

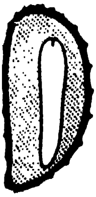

Fig. 168. Long. sect. of fruit.

Lobelia Erinus.

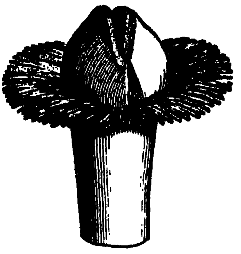

Fig. 169. Upper extremity of style ($\frac{10}{1}$).

We can only regard as sections[3] of this vast genus the following types, several of which are still distinguished as genera by many authors. Before passing them in review we must recollect that the divisions of the corolla are often all quite free and are only united to a variable extent, and that the stamens, though described as inserted on the petals, are frequently only applied to the internal face of the latter, that they remain more or less united with them, and that they separate from them to the base under the influence of a certain traction or in the aged flower.

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[1] To a very variable extent, according to species and age; an ovary only partly superior sometimes becoming almost entirely free in the ripe fruit.

[2] Blue, white, yellow, red, purple or violet.

[3] And often these sections are not clearly distinguished.

Lobelia arborea Forst.,[1] type of a genus *Sclerotheca*,[2] presents the two following peculiarities. The sepals, little dissimilar, easily separate from each other; but the fruit, dehiscent like other *Lobelias*, has thicker and harder walls, which are finally detached from the superficial tissue of the receptacle by which they were at first covered below the calyx.

Dialypetalum[3] is a *Lobelia* of Madagascar, the corolla of which, a little less irregular than that of our common species, is formed of petals separable from each other in their whole extent, and the floral clusters are generally much ramified.

Lobelia lutea[4] and some allied species, natives of southern or eastern Africa, the anthers of which are more unequal than in many other species, the anterior being shorter and forming with the others a tube the upper orifice of which is nearly square, have a geniculate style which, above a collarette of hairs, divides into two piliferous branches a little dissimilar and unequal, more or less revolute. They have been made the type of a genus *Monopsis*.[5]

Rhynchopetalum[6] comprises tropical Lobelias of both worlds with voluminous clusters rich in flowers, the corolla of which has straight lobes or curved at the summit, the upper incumbent, or straight or recurved. As in *Tylonium*,[7] which has also been made a distinct genus, these two upper divisions may form a sort of lip, independent of the three other petals.

In *Haynaldia*,[8] also Lobelias with rich inflorescences in clusters with axillary bracts often large or foliaceous, the corolla most frequently is thus divided into two unequal lips. Moreover the seeds are marginally surrounded by an ellipsoid or suborbicular wing. They are large Brazilian species which in all their characters approach very closely to *Tupa*,[1] which has also been made a separate genus, and which consists of tall herbs with flowers in large foliaceous clusters or furnished with large bracts, with yellow or red petals, long united, except frequently in front, and more or less incurved at the summit. The anthers, generally bare at the top, often have dorsal hairs. These plants inhabit South-Western America.

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[1] *Prodr.* n. 308.

[2] A. DC. *Prodr.* vii. 356.—Endl. *Gen.* n. 3061^{1}.—B. H. *Gen.* ii. 548, n. 9.

[3] Benth. *Gen.* ii. 553, n. 20.

[4] L. *Spec.* 1322.

[5] Salisb. *Trans. Hort. Soc.* ii. 37, t. 2.—A. DC. *Prodr.* vii. 351.—Harv. and Sond. *Fl. cap.* iii. 534.—Urban, *Monogr. d. Afrik. Lobel.-Gatt.* Monopsis, *Jahr. Bot. Mus. Berl.* i. 470, c. fig. 6. —*Parastranthus* G. Don, *Gen. Syst.* iii. 716.—DC. *loc. cit.* 354. M. Urban's diagnosis of the genus is as follows: "Flowers not resupinate. Stamens connate in a recurved, rarely straight or apically subincurved tube; anterior anther shorter, lateral anthers connivent with it at apex leaving a subquadrate excision. Style geniculate; shanks segregated in a hollow of collected hairs, the upper shorter; connate with stigma below, linear above, from the commencement of anthesis, surmounting the anthers; the hindmost once twice revolute." The flowers of *L. lutea* have appeared to us resupinate.

[6] Fresen. *Mus. Senkenb.* iii. 66, t. 4.

[7] Presl, *Monogr. Lobel.* 31.—A. DC. *Prodr.* vii. 394.

[8] Kan. *Mag. Növ. Lapok*, i. 1877), 3; *Mart. Fl. bras.* lxxx. 140, t. 42.

In the three preceding types the top of all the anthers may be furnished with hairs, or papillose, or bare; or only the three largest are penicillate at the summit.

Dobrowskia,[2] in other respects like *Monopsis* in construction, has likewise a small corolla, the parts of which separate so as to form two lips. They are also African.

Isolobus[3] comprises small Lobelias with creeping stem, and flowers often polygamous, with petals nearly equal, like those of *Dialypetalum*, but less easily separable.

L. Bergiana CHAM. has a narrow and elongate capsule which, after opening at the top, finally divides lengthwise, as often happens with age in many Campanulas. It has been made the type of a genus *Grammatotheca*.[4]

Trimeris[5] is a woody Lobelia of St. Helena, the three upper petals of which generally remain united to a considerable extent, while the other two are early detached to their base.

Palmerella[6] includes Lobelias from North America, the petals of which are to a large extent united in a cylindrical tube by means of the staminal filaments which are described as being inserted in the upper part of this tube, whereas they are in reality prolonged to the base.

L. dioica R. BR., an Australian species, has polygamous diœcious flowers and two anthers smaller than the others, surmounted by a hair or pencil of hairs. It has been made a genus *Holostigma*[1]; the two lobes of the style often being connected to the summit.

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[1] G. DON, *Gen. Syst.* iii. 700.—A. DC. *Prodr.* vii. 391 (part.).

[2] PRESL, *Monogr. Lobel.* 8.—A. DC. *loc. cit.* 355.—URBAN, *loc. cit.* 271, 273.

[3] A. DC. *Prodr.* vii. 352.

[4] PRESL, *Monogr. Lobel.* 7.

[5] PRESL, *loc. cit.* 46.—A. DC. *Prodr.* vii. 337.

[6] A. GRAY, *Proc. Amer. Acad.* xi. 80.—B. H. *Gen.* ii. 1238, n. 11 a. It is sufficient to compare the flower of this plant with that of *Lobelia amœna*, &c.

Mezleria,[2] inhabiting southern Africa, has also most frequently unisexual flowers; like *Isolobus* they are plants of low habit and often creeping.

Thus constituted, the great genus *Lobelia* includes more than two hundred species[3] found in all warm and temperate regions of both worlds.

Laurentia is very closely allied to *Lobelia*, to which it was formerly united. It has its andrœcium, gynæcium and fruit; but the corolla forms a continuous tube to the end or is very shortly divided, and they are low subacaulous herbs, with leaves rosetted at the base, whence emerge small erect one-flowered shafts. There is one European species; the others are natives of North Africa and North America.

Siphocampylus is also very near *Lobelia*, analogous to those with a tall subshrubby or shrubby stem; sometimes they are climbing. Two of the anthers are surmounted by a pencil of hairs, and the fruit opens at the top like that of *Lobelia*; but the corolla is a tube of a single piece, or open only to a very short extent as in *Laurentia*. They are plants of tropical America.

Centropogon is from the same country, has the same organs of vegetation and the same corolla as *Siphocampylus*; but the fruit is a berry, indehiscent and more or less fleshy (fig. 170). In those named *Burmeistera*, tall or subshrubby climbing perennial herbs, the anthers are without hairs at the top.

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[1] G. DON, *Gen. Syst.* iii. 716.

[2] PRESL, *Monogr. Lobel.* 7.

[3] CAV. *Icon.* t. 512, 516, 518, 521, 522.—DELESS. *Icon. sel.* v. t. 6 (*Grammatotheca*), 7 (*Monopsis*), 8 (*Isolobus*), 9 (*Dobrowskia*), 10; 11 (*Tupa*).—A. GRAY, *Synops. Fl. N.-Amer.* ii. 3; 8 (*Palmerella*); *Man.* (ed. 5), 284; *Bot. Calif.* i. 619.—CHAPM. *Fl. S. Unit. St.* 253.—GRISEB. *Fl. brit. W.-Ind.* 385; 386 (*Tupa*).—C. GAY, *Fl. chil.* iv. 324; 327 (*Tupa*).—HOOK. F. *Handb. N.-Zeal. Fl.* 171.—CLKE, *Hook. Fl. brit. Ind.* iii. 423; *Journ. Linn. Soc.* vi. 14; vii. 204.—BENTH. *Fl. Austral.* iv. 122.—HARV. and SOND. *Fl. cap.* iii. 532 (*Grammatotheca, Metzleria*), 534 (*Monopsis*), 535 (*Isolobus*), 536 (*Purastranthus*), 537; 549 (*Dobrowskia*).—HARV. *Thes. cap.* t. 162.—HEMSL. *Oliv. Fl. trop. Afr.* iii. 464.—BAK. *Fl. maur.* 183.—BOISS. *Fl. or.* iii. 884.—VATKE, *Linnæa*, xxxviii. 718.—WILLK. et LGE, *Prodr. Fl. hisp.* ii. 278.—GREN. et GODR. *Fl. de Fr.* ii. 396.—KAN. *Mart. Fl. bras. Camp.* 136, t. 41.—*Bot. Reg.* t. 973, 1325, 1612, 2914.—*Bot. Mag.* t. 514, 641, 741, 901, 1319, 1825, 1484, 1492, 1499, 2137, 2277, 2519, 2550, 2693, 2701, 3012, 3138, 3207, 3550, 3600, 3604, 3609, 3671, 3784, 4002, 4150, 4505, 4960, 4964, 5088, 5587.—WALP. *Rep.* ii. 706; vi. 374; 738 (*Tupa*); *Ann.* i. 467; ii. 1032; 1033 (*Tupa*); v. 389.

Delissea, plants from the Sandwich Isles, with woody or more or less fleshy stems, often little ramified and bare at the base, have the flowers of *Lobelia*, almost always geminate or numerous in the axils of the leaves, fruit fleshy like that of *Centropogon*, with a calyx very variable following the sections of the genus, but with all possible degrees of development from one species to another. This calyx is formed of dentiform or linear-subulate sepals, or broad and foliaceous, overlapping one another or marginally contiguous in a tube as long as or shorter than the corolla, and wholly or partly enveloping it till the time of anthesis.

Centropogon surinamense.

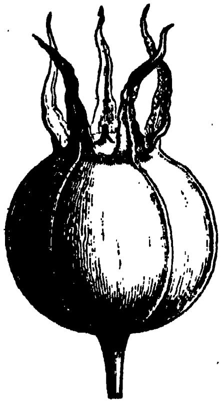

Fig. 170. Fruit.

With the habit of *Delissea* and a thick spongy stem, *Apetahia*, from Tahiti, has axillary flowers the peduncle of which bears two bracts, a long corolla dividing laterally, and an ovary exceptional in this group in that it is unilocular with two parietal, lateral placentas, little prominent and multi-ovulate.

Brighamia, from the Sandwich Isles, is also a shrub with fleshy stem without branches. The flowers are nearly regular with a narrow and very long corolla tube and stamens united in a tube itself connate below with that formed by the petals. All the anthers are surmounted by penicillate hairs; the stigmatiferous extremity of the style is shortly bilobed and the fruit, at first rather fleshy, finally opens by two longitudinal clefts.

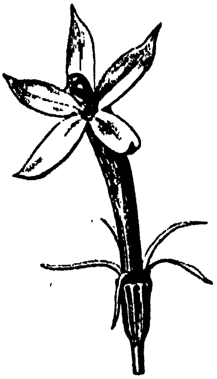

Fig. 171. Flower.

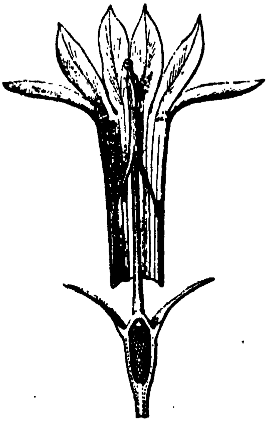

Fig. 172. Sect. of flower with erect corolla.

Isotoma (fig. 171, 172), inhabiting Oceania and the Antilles, has a corolla limb nearly regular, with a tube entire or finally divided on one side. The stamens are separate from this tube only above the middle or near the top; and the anthers are little dissimilar, two of them being surmounted by one or several hairs. The capsular fruit opens at the top in two valves, like that of *Lobelia.*

Lysipoma has the irregular corolla of *Laurentia,* that is with an entire tube or nearly so. The two ovarian cells are more or less incomplete, and the fruit is a pyxis. They are herbs, often low cæspitose, growing in the American Andes. *Pratia* inhabiting the same regions often has the same habit. But the fruit is an indehiscent berry, and the corolla is oftener divided in its entire length; though in the group of which a genus *Hypsela* has been constituted, the margins of this division most frequently remain united for the greatest part of their extent. Some of these plants are also found in New Zealand, in Australia and even in tropical Africa.

Downingia, annuals from the western side of both Americas, have a corolla with a slender tube and an erect bilabiate limb.

Heterotoma lobelioides.

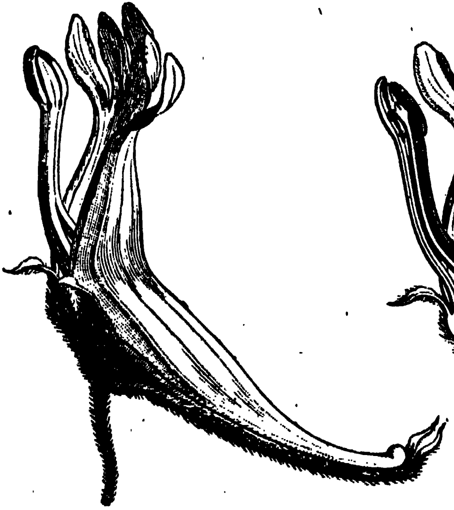

Fig. 173. Flower ($\frac{4}{1}$).

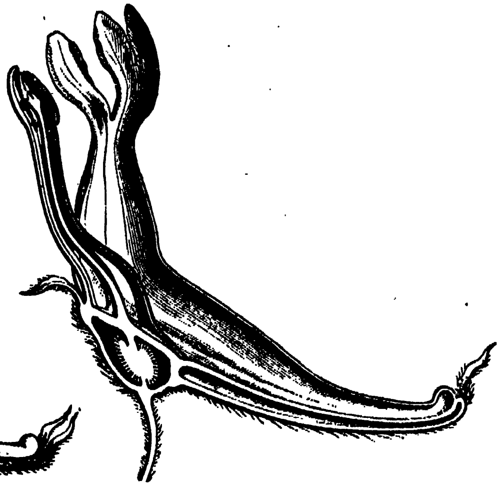

Fig. 174. Long. sect. of flower.

The stamens, independent of the corolla, are dissimilar, two being surmounted by a hair, and the ovary, narrow and elongate, is divided into two cells by a delicate partition, wanting in the upper part and often finally disappearing entirely. The capsular fruit opens lengthwise by a number of unequal clefts varying from one to four.

Heterotoma (fig. 173, 174), annual or perennial herbs from

Mexico, are exceptional in this series by the very oblique mode of insertion of the corolla. The base is dilated to correspond to the deformation of the floral receptacle which, seen from above, is prolonged posteriorly in a long bowl. In the summit of this contracted portion are inserted two sepals, whilst the three others are borne by the other extremity of the receptacle, and the narrowed base of the corolla covers posteriorly the contracted portion of the receptacle forming with it a sort of adherent spur or arched canal into which the decurrent portions of two staminal filaments project. These emerge above by an anterior cleft of the corolla, and there form a tube crowned with five dissimilar anthers. The fruit is an irregular, oblique and loculicidal capsule.

IV. CYPHIA SERIES.

The *Cyphias*[1] (fig. 175, 176), which have hitherto, without valid reason, been made the type of a distinct family, are Lobelieæ, the

Cyphia sylvatica.

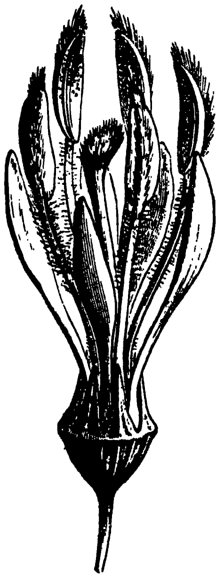

Fig. 175. Flower (4/1).

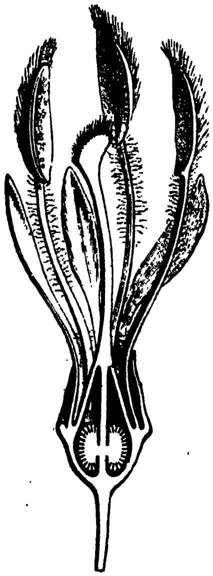

Fig. 176. Long. sect. of flower.

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[1] Berg. *Fl. cap.* 173.—J. *Gen.* 165.—Presl, *E. Mey. Comm. pl. Afr. austr.* 292.—Endl. *Gen.* n. 3041.—A. DC. *Prodr.* vii. 497, 792.—B. H. *Gen.* ii. 554, n. 23.

resupinate corolla of which has five divisions marginally united and finally separating, often to the base[1]; above, they form two lips: the posterior formed of three petals, the anterior of two. The staminal filaments, more or less large and flat, finally separate, and also the petals which they were the means of uniting to a considerable extent. The ovary, inferior, bilocular and multiovulate, is surmounted by a style, the stigmatiferous surface of which, entire or bilobed, occupies the straight or bent surface of the organ. The fruit, capsular, loculicidal and septicidal, opens above in four pannels, and the albuminous seeds are indefinite in number. They are African herbs, especially from the south; one only is Abyssinian; the leaves are alternate and the flowers[2] solitary and axillar, or united in clusters or terminal spikes. About twenty species are enumerated.[3] The stems are slender, erect or twining.

Near *Cyphia* have been placed, somewhat artificially, the genera *Cyphocarpus* and *Nemacladus*,[4] the petals of which remain long united in one or more masses. In the former the stamens are inserted high in the tube of the corolla, and the fruit opens by a longitudinal cleft. In the latter, on the contrary, the stamens are finally free and the capsule is bivalve.

V. GOODENIA SERIES.

In *Goodenia*[5] (fig. 177, 179), which has given name to a separate family, the flowers are hermaphrodite and irregular, and the concave receptacle has the form of a hollow horn in which the ovary is wholly or partly imbedded. The margin of the receptacle bears a calyx of five valvate sepals, and a gamopetalous corolla the tube of which separates from the receptacle, either at the same level as the calyx, or higher; it is sometimes dilated anteriorly at the base in a boss or spur corresponding to a petal, and often divides on the other side in a part or the whole of its length. Its lobes are unequal and are detached from the oblique throat of the corolla at various heights, two in particular higher than the three others. They are induplicately valvate in the bud; and their re-entrant portions, often thinner than the median, form, at the time of blossoming, a sort of wings undulate at the margin or auriculate at the base. The andrœcium is formed of five stamens, inserted with the corolla, alternately with its divisions, and composed each of a free filament and a bilocular, introrse anther, dorsally inserted and more or less low, dehiscing by two longitudinal clefts.[1] The ovary has two cells, complete or incomplete, enclosing a variable number of ovules, from one or two in each cell to an indefinite number; they

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[1] As the *Lobelias* called *Dialypetalum*.

[2] White, blue or red.

[3] Besides *Parishella*.

[4] L. *Spec.* 1319 (*Lobelia*).—Thunb. *Prodr. Fl. cap.* 39; *Fl. cap.* 179 (*Lobelia*).—Burm. *Afr.* t. 38 (*Lobelia*).—A. Rich. *Fl. abyss.* t. 64. —Harv. *Thes. cap.* t. 159–161.—Harv. and Sond. *Fl. cap.* iii. 597.—*Bot. Reg.* t. 625.—Walp. *Ann.* ii. 1037.

[5] Sm. *Trans. Linn. Soc.* ii. 346.—Gærtn. f. *Fruct.* iii. t. 211.—Turp. *Dict. sc. nat.* Alt. t. 81.—DC. *Prodr.* vii. 512.—Endl. *Gen.* n. 3043.—Payer, *Organog.* 647, t. 149.—H. Bn, *Payer Fam. nat.* 247.—B. H. *Gen.* ii. 538, n. 4.—*Aillya* de Vries, *Gooden.* 75, t. 13.—*Tetraphylax* de Vries, *loc. cit.* 164.—*Picrophyta* F. Muell. *Linnæa*, xxv. 421.

Goodenia ovata.

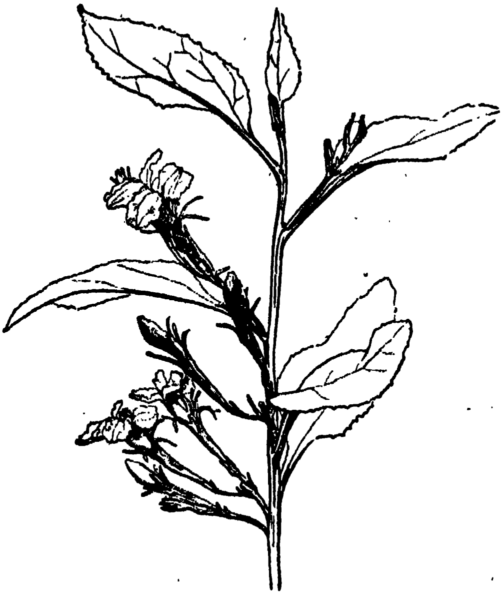

Fig. 177. Flowering branch.

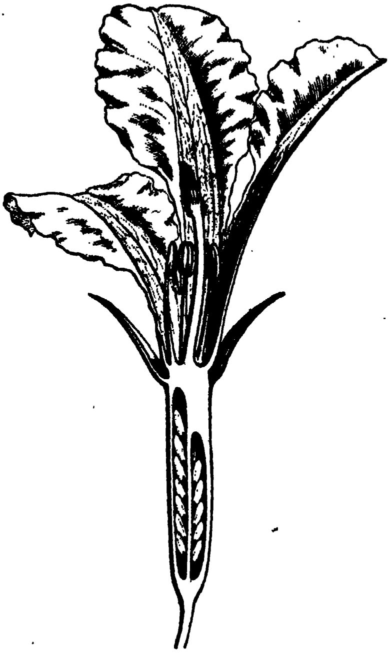

Fig. 178. Long. sect. of flower.

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[1] The pollen of the Goodenieæ, so far as it has been studied, is "ovoid, three folds; in water, a sphere with the bands with three papillæ: *Scævola lævigata*, *Goodenia ovata*, *G. decurrens*, *Dampiera ferruginea*, *D. ovalifolia*" (H. Mohl, *Ann. sc. nat.* sér. 2, iii. 316). It is similar in *Cyphia*, referred by several authors to the same group.

are ascending, anatropous with micropyle turned downwards. The style terminates in a stigmatiferous extremity, rather swollen, obtuse, perforated at the top or bilobed. But this real top of the style is not seen, because it is completely enclosed in an accessory cupule, originating above it and terminating in a large upper opening, more or less long ciliate. The fruit is a capsule opening in two parallel valves at the partition, which themselves often divide in two halves beginning from the top. The seeds are limited or unlimited in number; they are more or less flattened, thickened sometimes at the margin or dilated in a marginal wing, sometimes very narrow. The fleshy albumen which they contain surrounds a fleshy embryo, of about half the length or less, the radicle of which is generally inferior.

Goodenia ovata.

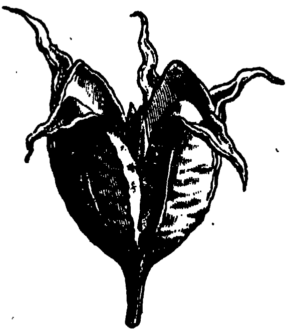

Fig. 179. Dehiscent fruit.

The Goodenias are Australian plants, herbaceous, subshrubby or shrubby. About seventy species have been described.[1] The leaves are alternate, without stipules, sometimes rosulate at the base of the plant. The flowers[2] are axillar, solitary or grouped in cymes; and not unfrequently, the leaves being replaced by bracts, the general inflorescence is terminal, in the form of a simple or compound cluster, or formed of cymes.

Selliera,[3] herbaceous plants of Australia, New Zealand and extratropical South America, has the general characters of *Goodenia* (of which some authors have made them only a section); the pericarp, thicker and at first rather fleshy, opens only lengthwise and incompletely.

Calogyne (fig. 180), oceanic herbs found on the south-eastern shores of Asia, has all the organization of *Goodenia*; they are considered as forming a separate genus on account of the style which divides above into two or three branches, each of which bears at the summit a small stigmatiferous surface completely surrounded by a cupule.

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[1] BENTH. *Fl. Austral.* iv. 50.—F. MUELL. *Fragm. Phyt. Austral.* viii. 56; x. 12, 110.

[2] Yellow, blue or purple.

[3] CAV. *Icon.* v. 49, t. 474.—DC. *Prodr.* vii. 516.—ENDL. *Gen.* n. 3042.—BENTH. *Fl. Austral.* iv. 82.—B. H. *Gen.* ii. 539, n. 6.—C. GAY, *Fl. chil.* iv. 345.—HOOK. F. *Handb. N.-Zeal. Fl.* 173.

Calogyne pilosa.

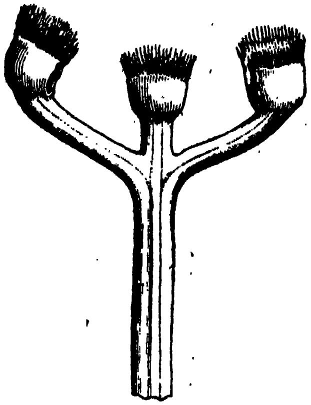

Fig. 180. Style.

As among the *Campanuleæ* with regular corolla there are exceptional types with superior ovary, such as *Cyananthus*, so *Goodenia* has analogous examples with free perianth and andrœcium. These are *Velleia* (fig. 181–185), the inferior corolla of which often possesses a salient spur on the anterior median line. The fruit is a free capsule, 2 or 4-valved, and the ovary may be divided into two incomplete cells with a pluriovulate and basal placenta; but sometimes it presents only a single cavity. They are Australian herbs. From them can hardly be separated generically *Euthales* (fig. 184, 185), in which the ovary is less completely superior relatively to the corolla, and, as in some *Goodenias*, there is an appreciable interval between the insertion of the calyx and that of the corolla.

Velleia paradoxa.

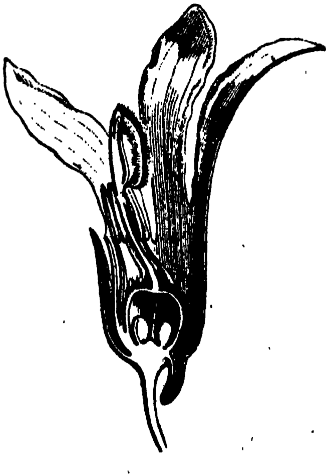

Fig. 181. Long. sect. of flower (4/1).

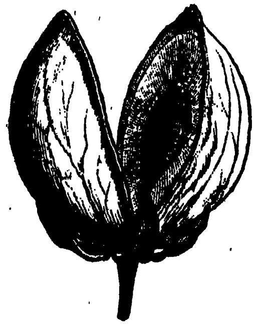

Fig. 182. Dehiscent fruit with calyx.

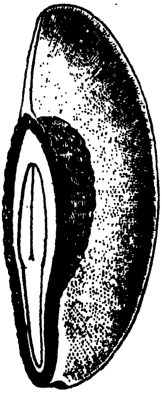

Fig. 183. Long. sect. of seed.

Very near *Goodenia* are ranged the two Australian genera *Anthotium* (fig. 186) and *Leschenaultia*, the anthers of which are united round the style. The former have an indusium similar to that of *Goodenia*, which surrounds the summit of the style like a continuous sac, whilst *Leschenaultia* has this bilabiate envelope, with the two lips nearly equal or sometimes very unequal, one of them in some species being reduced to very small dimensions (fig. 187).

Velleia (Euthales) trinervis.

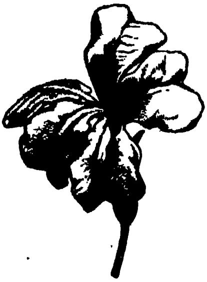

Fig. 184. Flower.

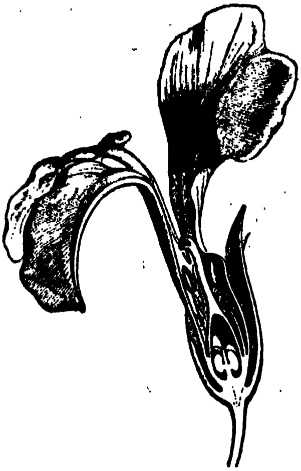

Fig. 185. Long. sect. of flower ($\frac{2}{1}$).

In *Catosperma*, an Australian plant, the fruit is said to be drupaceous, and the two ovules contained in each of the two cells are descending instead of ascending as in the preceding genera.

Anthotium humile.

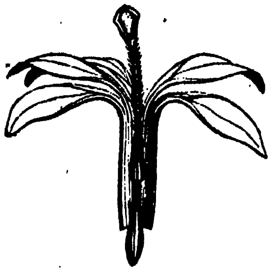

Fig. 186. Flower with perianth opened.

Leschenaultia biloba.

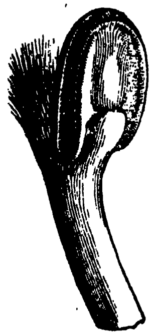

Fig. 187. Top of style.

Scævola (fig. 188–191), often made a small separate group, has the flowers of *Goodenia*, with a corolla divided on one side lengthwise and anthers not adherent. At the top of the style is a dilatation enveloping the stigma. But the inferior ovary is reduced to a cavity incompletely divided into two uniovulate compartments, and the fruit is a drupe. They are herbaceous or shrubby plants from both hemispheres, abundant on the coast, with alternate or opposite leaves, axillary flowers, solitary or in cymes.

Dampiera, also inhabiting Australia, may be defined as Goodenias with uniovulate cells. And further, one of the two cells is most frequently aborted, as it rarely contains an ovule; the ovule is anatropous, ascending or nearly erect. The fruit is indehiscent like that of *Scævola*; and the seed varies in form, being sometimes like that of *Goodenia*, sometimes of *Velleia*. In those Dampieras called *Verreauxia*, the divisions of the corolla, the tube of which is dorsally divided, are winged or unequal and are without auricles; the upper are connivent. The anthers are free.

Scævola microcarpa.

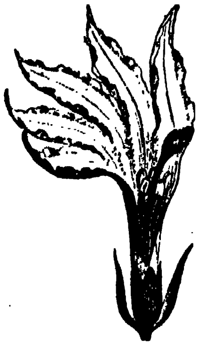

Fig. 188. Flower ($\frac{4}{1}$).

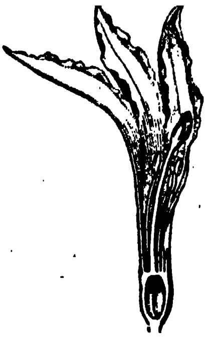

Fig. 189. Long. sect. of flower.

Scævola Lobelia.

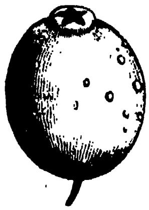

Fig. 190. Fruit.

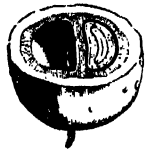

Fig. 191. Trans. sect. of fruit.

VI. BRUNONIA SERIES.

Brunonia[1] (fig. 192–195), which has been made a separate family, has irregular, pentamerous, hermaphrodite flowers generally constructed like those of the Goodenieæ. But the gynœcium, free as in *Velleia*, is inserted, not on the upper surface of a nearly flat receptacle, but at the bottom of a concave obconical receptacle to the walls of which the ovary has no adherence. The perianth is inserted on the margin of the receptacular cavity so as to become quite perigynous. The calyx is persistent, and the corolla gamopetalous with an elongated tube and a somewhat irregular, valvate, pentamerous limb. The stamens are inserted near the base of the corolla, and the anthers form a sheath around the style, which bears at its summit a stigmatiferous sac-like indusium. The fruit is dry, monospermous, containing a seed without albumen, and is surrounded by a sac consisting of the receptacle surmounted by the persistent calyx. *B. australis*,[1] the only known species of the genus, is a perennial Australian and Tasmanian herb, with leaves rosetted at the base, covered with a silky down; flowers blue, collected at the top of a simple shaft in a spurious capitule, which is a union of contracted cymes accompanied with bracts.[2]

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[1] Sm. *Trans. Linn. Soc.* x. 365, t. 28, 29.—R. Br. *Prodr. N.-Holl.* 589; *Trans. Linn. Soc.* xii. 132; *Misc. Works* (ed. Benn.), i. 31; ii. 267, 269, 310, 357.—F. Bauer, *Ill. pl.* t. 10. —A. DC. *Prodr.* xii. 616.—Endl. *Gen.* n. 3037. —Lindl. *Introd.* (ed. 2), 266; *Veg. Kingd.* 657.—Benth. *Journ. Linn. Soc.* xv. 1, 3; *Gen.* ii. 541, n. 18.

Brunonia australis.

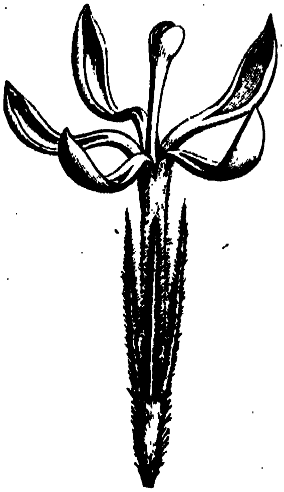

Fig. 192. Flower ($\frac{4}{1}$).

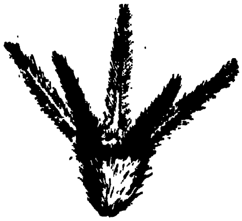

Fig. 194. Fruit.

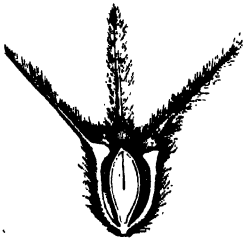

Fig. 195. Long. sect. of fruit.

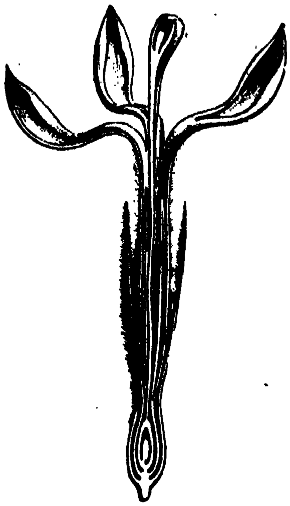

Fig. 193. Long. sect. of flower.

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[1] SM. *loc. cit.*—GUILLEM. *Ic. lith.* t. 15.—PAXT. *Mag.* vii. 267.—HOOK. F. *Fl. tasm.* i. 229.—LINDL. *Bot. Reg.* t. 1833.—SCHLCHTL, *Linnæa*, xx. 598.—BENTH. *Fl. Austral.* iv. 121.—*Bot. Reg.* t. 1833.—*B. sericea* SM. *loc. cit.* x. 367, t. 29.—BAUER, *Ill.* t. 10.—*B. simplex* LINDL.

[2] H. BN, *Bull. Soc. Linn. Par.* 442.

VII. PHYLLACHNE SERIES.

Phyllachne[1] (fig. 196, 197) has hermaphrodite and regular flowers, which, by the inferior ovary and the perianth, particularly by the gamopetalous corolla, with the small dimensions, are analogous to those of a *Campanula*. The superior calyx may be formed of five sepals, and the corolla have five lobes; but the number of divisions in both may be raised to eight or nine. The inferior ovary has two pluriovulate cells; but the partition separating them is incomplete above or below, and is finally reduced to a central vertical column adhering to the two extremities of the ovarian cavity, the lateral membranous portions having entirely disappeared. A central column surmounting the style and accompanied at its base by two epigynous glands of variable form and height, alternating with the stamens, terminates above in a stigmatiferous head with two lobes more or less broad and long, superposed to ovarian cells, and in two alternate, that is lateral, anthers. These anthers are

Phyllachne magellanica.

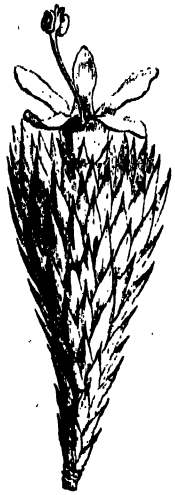

Fig. 196. Habit.

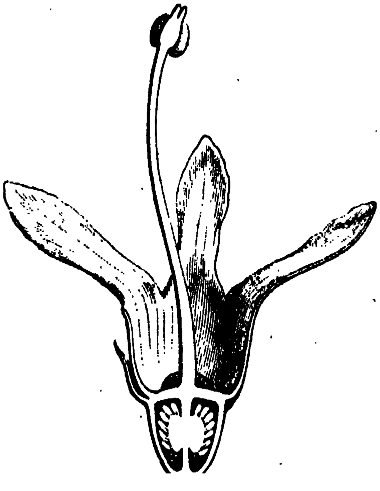

Fig. 197. Long. sect. of flower ($\frac{3}{1}$).

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[1] FORST. *Char. gen.* (1776), 115, t. 58.—SW. *Schrad. Journ. bot.* ii. 273.—LAMK, *Journ. d'hist. nat.* i. 190, t. 10; *Ill.* t. 741.—POIR. *Dict.* v. 294.—J. *Ann. Mus.* xviii. t. 2, fig. 3.—ENDL. *Gen.* n. 3095 a.—B. H. *Gen.* ii. 535, n. 4.—F. MUELL. *N. Giorn. bot. ital.* v. 171; xi. 203; *Trim. Journ. Bot.* (1878), 178.—*Stibas* COMMERS. herb.—*Helophyllum* HOOK. *N.-Zeal. Fl.* 167.

extrorse, with two cells confluent above, and finally present only one hippocrepiform cleft with inferior concavity.[1] The fruit is dry, crowned with the scars of the perianth and column. It is normally indehiscent in the true Phyllachnes, but it opens by a hole at the top or by two small valves in those called *Forstera.*[2]

They are perennial alpine herbs, glabrous, often having the habit of moss or heath, and forming large plates by their cæspitose branches, charged with small imbricate leaves. *Forstera* often has rather larger leaves collected at the base in a rosette. The flowers are solitary and terminal, sessile in the true *Phyllachne,*[3] in *Forstera*

Stylidium adnatum.

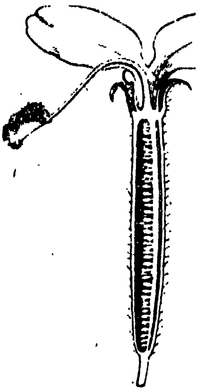

Fig. 200. Long. sect. of flower.

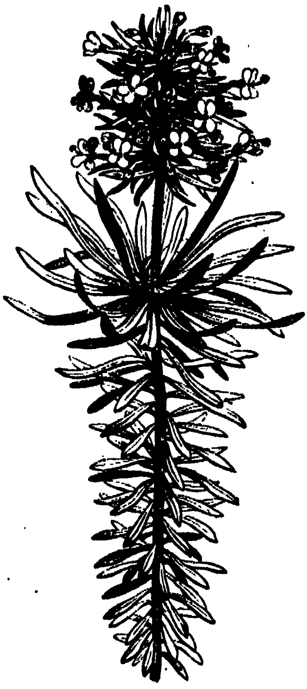

Fig. 198. Flowering branch.

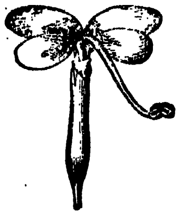

Fig. 199. Flower.

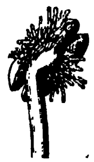

Fig. 201. Back view of andrœcium and stigma.

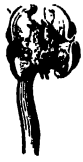

Fig. 202. Front view of andrœcium and stigma.

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[1] The pollen of *Stylidium* observed is "ovoid; three folds; in water depressed ellipsoid, with three bands; bands punctuate" (H. Mohl, *Ann. sc. nat.* sér. 2, iii. 316).

[2] L. f. *Nova. Acta Soc. sc. upsal.* iii. 184, t. 9 (1780).—Sw. *Schrad. Journ.* (1799), ii. 31, t. 1, 2, fig. 2; *Kœn. Journ.* i. 291, t. 6.—Endl. *Gen.* n. 3095.—DC. *Prodr.* vii. 338.—B. H. *Gen.* ii. 535, n. 3.

[3] Under the flower there are bracts, usually two.

borne on a slender stem at the top of which they are sometimes geminate. The genus thus limited comprises six or seven species,[1] Australian, Tasmanian, and New Zealand. One inhabits the neighbourhood of the Straits of Magellan, and is believed to grow in Terra del Fuego.

It is not uncommon to see the corollas of *Phyllachne* rather irregular, and this forms a marked transition from these plants to *Stylidium*, the name of which has been given to the group we are now considering, though it represents only a devious type.

Stylidium (fig. 198–204) has pentamerous flowers, but generally more or less bilabiate, and the anterior division, often called the lip, differs from the four others in dimension and by its peculiar form.

Stylidium graminifolium.

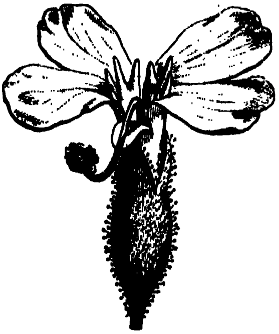

Fig. 203. Flower.

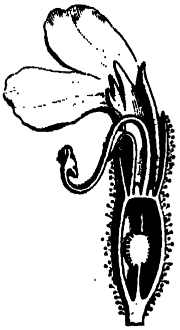

Fig. 204. Long. sect. of flower.

The stamens, two in number, are united with the style in a column, often mobile and elastic, and separate from it only immediately below the stigmatiferous summit. The ovary has two multiovulate cells; but the ovules are inserted on the partition which, above them, is more or less incomplete; so that the ovary is unilocular above. *Stylidium* comprises Oceanic and more rarely Asiatic herbs, the flowers of which are in terminal spikes, or more rarely solitary.

In *Levenhookia* (fig. 205, 206), the flowers of which are equally irregular, the petal called the labellum or lip takes the form of a hood; the two stamens have two cells nearly superposed near the top of the stylary column, and the interlocular partition remains so short that the multiovulate placenta is sensibly free in the middle, like that of the Primulaceæ. They are small Australian herbs with small flowers in short terminal, often few-flowered clusters.

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[1] Hombr. et Jacquin, *Voy. au pôle sud, Bot. phanérog.* t. 16 (*Forstera*).—Hook. *Icon.* t. 851 (*Forstera*).—Hook. f. *Fl. antarct.* i. t. 28 (*Forstera*); *Fl. tasm.* i. 236; *Handb. N.-Zeal. Fl.* 166 (*Forstera*).—Benth. *Fl. austral.* iv. 36 (*Forstera*).

Levenhookia pusilla.

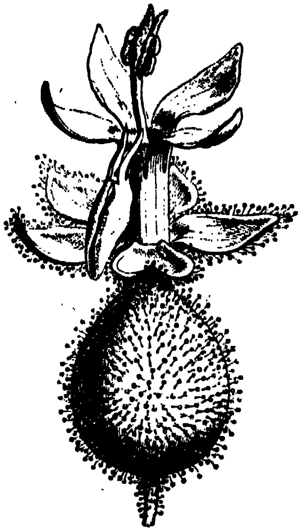

Fig. 205. Flower (♀).

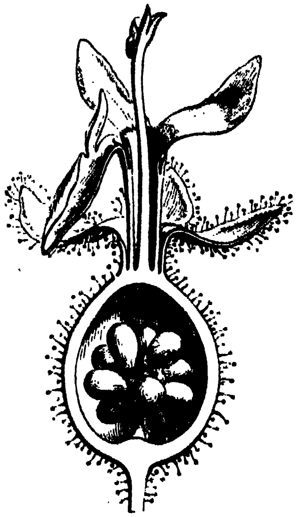

Fig. 206. Long. sect. of flower.

This family,[1] as we have defined it, becomes a group by concatenation which many writers have divided into several distinct families. In it we have included 52 genera, comprising about 1330 species. The characters on which we base the series they form are the following:—

I. Campanuleæ.[2]—Flowers regular or nearly so. Ovary inferior or in part superior, with two or more cells. Stamens ordinarily equal in number to that of the valvate divisions of the corolla (generally gamopetalous and sometimes dialypetalous), rarely inserted upon it, but oftener on the receptacle. Anthers free or rarely united at the margin. Fruit dry, often dehiscing by pannels below the calyx, or by clefts, or above it transversely, or by pannels, more rarely indehiscent or fleshy.—Herbaceous plants, rarely woody, often with a milky juice, with a definite, an indefinite or mixed inflorescence.—22 genera.

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[1] *Campanulæ* Adans. *Fam. des pl.* ii. 132, Fam. 17.—*Campanulaceæ* J. *Gen.* 163, Ord. 4; *Ann. Mus.* xviii. 1.—Bartl. *Ord. nat.* 151.—Benth. *Campanulaceæ and their allies*, *Journ. Linn. Soc.* xv. 1.

[2] *Campanuleæ* A. DC. *Monogr. Campanul.* in-4° [1830].—*Campanulaceæ* DC. et Dub. *Bot. gall.* i. 311; *Prodr.* vii. 414, Ord. 105.—Lindl. *Veg. Kingd.* (1846), 689, Ord. 266.—Endl. *Gen.* 518, Ord. 125.—B. H. *Gen.* ii. 541, Ord. 91.—*Merciereæ* A. DC. *Prodr.* vii. 496, Trib. 3.

II. Sphenocleeæ.[1]—Flowers regular, with short imbricate corolla. Androecium isostemonous, with free anthers. Ovary bilocular semi-inferior. Fruit dehiscing circularly above the calyx. — A herb with alternate leaves. Flowers in a spike. — 1 genus.

III. Lobelieæ.[2]—Flowers irregular, sometimes resupinate. Corolla valvate, gamopetalous or dialypetalous, with parts more or less marginally adherent. Stamens inserted on the receptacle or on the corolla, anthers often united in a tube. Ovary inferior or partly superior, with two multiovulate cells, or unilocular, with two parietal placentas. Fruit dry or fleshy.—Herbaceous or woody plants, often with a milky juice, with leaves most frequently alternate, flowers solitary axillar or in terminal clusters.—12 genera.

IV? Cyphieæ.[3]—Flowers irregular. Petals valvate, free, or adherent to a variable extent and forming several spurious lobes. Stamens with free anthers. Ovary wholly or partly inferior, bilocular. Fruit dry, dehiscing in 1–4 valves.—Herbaceous plants. Flowers axillar, solitary, or in terminal clusters or spikes. — 4 genera.

V. Goodenieæ.[4]—Flowers irregular or rarely nearly regular, not resupinate. Corolla gamopetalous, inserted sometimes at a different level from that of the calyx. Stamens with anthers free or united in a tube around the style. Ovary dicarpellous, inferior, semi-inferior or superior. Style with stigmatiferous extremity more or less deeply 2-lobed and surrounded by a sac-like cupular or bilobed indusium, inserted below it. Ovarian cells 1, 2, pluri- or uniovulate, with ascending or more rarely descending ovule. Fruit capsular or fleshy, mono- or polyspermous. Herbaceous, subshrubby or shrubby plants, with milky juice, alternate or rarely opposite leaves. Flowers axillar or solitary.—8 genera.

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[1] *Sphenocleaceæ* Mart. *Conspect.* (1835), n. 162.—A. DC. *Prodr.* vii. 548, Ord. 110.—J.-G. Ag. *Theor. Syst. pl.* 340.—*Pongatieæ* Endl. *Gen.* 519.

[2] *Lobeliaceæ* J. *Ann. Mus.* xviii. 1 (part.).—Presl, *Prodr. Monogr. Lobel.* (1836).—Endl. *Gen.* 509, Ord. 124.—A. DC. *Prodr.* vii. 339, Ord. 104.—Lindl. *Veg. Kingd.* (1846), 692, Ord. 267.—J.-G. Ag. *Theor. Syst. pl.* 384.—*Lobelieæ* B. H. *Gen.* ii. 542, 545.

[3] *Cyphiaceæ* A. DC. *Prodr.* vii. 497, Ord. 106. — *Cyphieæ* B. H. *Gen.* ii. 543, 554, Trib. 2.

[4] *Goodenovieæ* R. Br. *Prodr.* 573.—Bartl. *Ord. nat.* 147.—DC. *Prodr.* vii. 502, Ord. 107.—B. H. *Gen.* ii. 536, Ord. 90.—*Goodeniales* Lindl. *Nat. Syst.* (ed. 2), 241.—*Goodeniaceæ* Lindl. *Veg. Kingd.* 694, Ord. 268.—Endl. *Gen.* 505, Ord. 123. — *Scævolaceæ* Lindl. *Introd.* (ed. 2), 242.

VI. BRUNONIEÆ.[1]—Flowers irregular, with concave receptacle in which is imbedded a uniovulate, inferior but free ovary. Ovule ascending. Fruit dry. Seed without albumen.—A perennial herb. Flowers in capitules of contracted cymes.—1 genus.

VII. PHYLLACHNEÆ.[2]—Flowers nearly regular or irregular. Stamens 2, borne on the style below its stigmatiferous extremity; anthers extrorse, with confluent cells. Ovary inferior, with two cells more or less incomplete. Placenta multiovulate, inserted on the interlocular partition, or centrally free. Fruit dry, dehiscent or indehiscent.—Herbs, sometimes subshrubby. Leaves alternate. Flowers solitary or in simple or compound spikes.—3 genera.

GEOGRAPHICAL DISTRIBUTION.—The sole *Brunonia* known is Australian. So also are nearly all the Goodenieæ and Phyllachneæ. New Zealand, however, and extratropical South America possess some species of these two groups, and there is in Southern Asia a *Stylidium* and a couple of Goodenieæ. The Cyphias are all South African; but of the three genera annexed to it, one (*Cyphocarpus*) is Chilian, and the two others are Californian. In fact, nearly all the plants except those of the Lobelieæ and Campanuleæ belong to the old world. Such also is the rule with the Campanuleæ. They are represented in America only by one *Cephalostigma*, some *Wahlenbergias*, *Githopsis* and a couple of the group *Specularia*. The Lobelieæ, on the contrary, are much more equally divided between the two worlds. All *Siphocampylus*, *Centropogon*, *Downingia*, *Hypsela*, *Rhizocephalum*, *Lysipoma* and *Heterotoma* are American, also those of the sections *Tylonium*, *Tupa* and *Haynaldia*. *Monopsis* and *Dobrowskia* are exclusively African. The type *Dialypetalum* belongs to the flora of Madagascar. The true Campanuleæ are represented in all parts of the world by *Wahlenbergia*. *Cyananthus*, *Codonopsis*, *Platycodon*, *Mindium*, *Peracarpa*, are all Asiatic. Southern Africa possesses a great many genera peculiar to herself: *Merciera*, *Siphocodon*, *Rhigiophyllum*, *Treichelia*, *Prismatocarpus*, *Roella*, *Microcodon*. *Canarina* has been found only in the Canary Isles. The eastern islands of tropical Africa are poor in Campanulaceæ; they possess, with some true Lobelias, the exceptional types *Heterochænia* and *Dialypetalum*. *Pentaphragma* exists only in Malaya. The oceanic archipelagoes are the exclusive centres of those singular Lobelieæ with soft woody stem, often undivided or little branched, the summit of which is crowned with leaves represented at Tahiti by *Apetahia* and *Sclerotheca*, in the Sandwich Isles by *Brighamia* and the various sections by us comprised in the genus *Delissea*. Several *Tupas* and *Haynaldias* constitute an analogous type in South America. While *Phyllachne* represents the family towards the south pole, some Campanuleæ remind us of it far in the north. *Jasione* advances as far as 59° and 61° in Norway and Finland; *Phyteuma spicatum* is found in Norway in the same latitude; *Campanula rotundifolia* ascends in Lapland to 71°, Rampion (*C. Rapunculus*) to 58°, and *Wahlenbergia hederacea* to 56° in the British Isles.

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[1] *Brunoniaceæ* R. BR. *Edinb. N. Phil. Mag.* (Sept. 1832).—LINDL. *Introd.* (edit. 2), 266.—ENDL. *Gen.* 505, Ord. 122.—A. DC. *Prodr.* xii. 615, Ord. 153.—J.-G. AG. *Theor. Syst. plant.* 324.

[2] *Stylidieæ* R. BR. *Gen. Rem.* 561; *Prodr.* 565.—ENDL. *Gen.* 519, Ord. 126.—DC. *Prodr.* vii. 331, Ord. 103.—B. H. *Gen.* ii. 534, Ord. 89.—*Stylidiaceæ* LINDL. *Veg. Kingd.* (1846), 696, Ord. 269.

PROPERTIES AND USES.—The Campanulaceæ proper, which have so many affinities to the Cichorieæ, often have also their properties, owing to their richness in an acrious and narcotic latex;[1] but its action is often diminished by the presence of a sweet mucilage. This is the case particularly in the young shoots and in the fleshy roots used as potherbs, as the Rampion (fig. 134-139),[2] *Campanula rapunculoides*,[3] several Campanulas of the section *Adenophora*,[4] *Phyteuma spicatum* L. &c. Several species of the latter have a reputation in Russia as remedies for syphilitic affections and madness. *Campanula Trachelium* L. and *Cervicaria* L., indigenous species, are extolled for diphtheritic affections. *C. glauca*, a Japanese species, is used in the treatment of a great number of affections, and does not yield to Ginseng as a panacea. In Chili *Wahlenbergia linarioides* A. DC. is prescribed for colic; and in Europe *W. graminifolia* for epilepsy. In the western isles of North Africa, *Canarina campanulata* (fig. 150) is remarkable for its fleshy fruit, which is eaten under the name of *Bicarro.*

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[1] On their laticiforous organs see TRÉCUL, *Compt. rend. Acad. sc.* lxi. 929; *Adansonia*, vii. 174.

[2] *Campanula Rapunculus* L. *Spec.* 232.—GREN. et GODR. *Fl. de Fr.* ii. 419 (*Rampon*, *Rave sauvage*, *Bâton de Jacob*, *Pied-de-saute-*

[3] L. *Spec.* 234.—*C. trachelioides* REICHB. (*Raiponcette*, *Fausse-Raiponce*).

[4] Notably *C. Alpini* L. (*Adenophora liliiflora* LEDEB. *Cat. H. dorpat.* (1822).—DC. *Prodr.* vii. 492, n. 6) and *C. Adenophora* (*Adenophora communis*

Among the Lobelieæ a great many species are remarkable for the extreme acridity of their latex. That of *Lobelia urens*,[1] a small herb of our marshy lands, is the cause of many poisonings among both men and beasts. To the former it is particularly dangerous from its ancient reputation as a remedy for marsh fevers: it is still often prescribed in the East. The South American Lobelias, which have been named *Tupa Feuillei, salicifolia, Berterii*, &c., have an extremely deleterious latex; nausea and vomiting are produced by simply inhaling from some of these species. In the Antilles *Isotoma longiflora*[2] has a terrible renown as a poisonous plant. The latex of some of the Lobelieæ is rich in caoutchouc; it is said to be extracted in Peru from *Siphocampylus Caoutschouk*.[3] In this group the fleshy fruits are sometimes edible, as those of *Canarina*; so also are those of *Centropogon surinamense* (fig. 170). The two Lobelias most useful in medicine are *L. inflata* and *syphilitica*[4] (fig. 162–168), North American species. The latter is esteemed in its native country as a depurative, antisyphilitic, sudorific; its immoderate use is dangerous. The odour and taste of *L. inflata*[5] are irritating and acrid like those of tobacco; it contains *lobeline*, which is an expectorant and sudorific. The plant is vomitive and, in a stronger dose, poisonous, acrid-narcotic; it has been extolled for dyspnœa and asthma; but it is scarcely used in Europe. *L. cardinalis*, *splendens*, *decurrens*, *prunifolia*, *coccinea* and *stricta* have been famed as remedies for rheumatism, gout and syphilis, all being acrid narcotics; they are used only in the new world.

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[1] L. *Spec.* 1321.—DC. *Fl. fr.* iii. 715.—GREN. et GODR. *Fl. de Fr.* ii. 396.—H. BN, *Tr. Bot. méd. phanér.* 1153 (*Lobélie brûlante*).

[2] PRESL, *Prodr. Monogr. Lobel.* 42.—DC. *Prodr.* vii. 413, n. 5.—ROSENTH. *Syn. pl. diaphor.* 815.—*Lobelia longiflora* W.—DESCOURT. *Fl. méd. Ant.* 156.—*Hippobroma longifolia* DON (*Rebenta caballos*).

[3] DON.—ROSENTH. *op. cit.* 316.—*Lobelia Caoutschouc* H. B. *S. barbatus* and *ferrugineus* DON have a similar latex-sac.

[4] L. *Spec.* 945.—JACQ. *Icon. rar.* t. 957.—KER, *Bot. Reg.* t. 537.—DC. *Prodr.* vii. 377, n. 110.—GUIB. *Drog. simpl.* éd. 7, iii. 10.—MÉR. et DEL. *Dict. Mat. méd.* iv. 137.—H. BN, *Tr. Bot. méd. phanér.* 1156, fig. 3010–3016.—*Rapuntium syphiliticum* MILL. (*Cardinale bleue*).

[5] L. *Act. upsal.* (1741), 23, t. 1.—BIG. *Amer. Med. Bot.* i. p. ii. t. 19.—DC. *Prodr.* vii. 380, n. 128.—GUIB. *Drog. simpl.* éd. 7, iii. 10.—BENTL. et TRIM. *Med. Pl.* n. 162.—H. BN, *Tr. Bot. méd. phanér.* 1153, fig. 3009.—*Rapuntium inflatum* MILL. (*Indian Tobacco*).

The *Cyphias* are sometimes edible. At the Cape the fleshy root of *C. digitata* is a potherb; that of *C. glandulifera* is used in Abyssinia as food for cattle. *Goodenia grandiflora* is used for the same purposes in New South Wales as the Gentians are among ourselves. *Scævola Lobelia*[1] (fig. 190, 191) has a bitter juice, especially abundant in the leaves and fruit; it is employed in eye affections, particularly in conjunctivitis and opacity of the cornea. The bark and wood are esteemed as tonics. The pith is extolled as aphrodisiac and antidiarrhœtic; light and porous, taking easily the most brilliant colours, it is used in Malaya for making artificial flowers, birds, butterflies and a host of ornamental objects. The base of the trunk may become hard enough for boards and the hulls of boats. The young leaves are potherbs; poultices and emollient lotions are prepared from them, and decoctions said to favour menstruation and urinary secretion.

A great number of ornamental Campanulas are cultivated in our gardens, several Wahlenbergias and Lobelias, *Platycodon*, *Mindium* (*Michauxia*), &c.; in our conservatories and orangeries, the beautiful *Siphocampylus*, *Centropogon*, *Roella*, *Goodenia*, *Stylidium*, &c. *Canarina canariensis*, *Downingia elegans* and *pulchella*, *Musschia aurea* and *Wollastoni* (fig. 155), *Leschenaultia formosa*, are also esteemed for the beauty of their flowers.

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[1] L. *Syst. veg.* ed. 13 (Murr.), 178.—Hiern, *Oliv. Fl. trop. Afr.* iii. 462.—*S. Plumierii* Vahl, *Symb.* ii. 36.—*S. Thunbergii* Eckl. et Zeyh.—*S. senegalensis* Presl.—*S. Sieberi* de Vr.—*Lobelia Plumierii* L. *Spec.* ed. 1, 929.—*Cerbera ovata* Sieb.—Presl, *Rel. Hænk.* ii. 59. *S. ii* Vahl, *Symb.* iii. 36.—DC. *Prodr.* vii. 505.—Benth. *Fl. Austral.* iv. 86 (*S. sericea* Forst.—R. Br. *Prodr.* 583.—*S. Taccada* Roxb.—*S. macrocalyx* de Vr.—*S. Lambertiana* de Vr.—*S. chlorantha* de Vr.—*S. Lobelia* de Vr. not L.), distinguished from the preceding by the length of its calycinal leaves, has similar properties.

GENERA.

I. CAMPANULEÆ.

1. **Campanula** T.—Flowers regular hermaphrodite; receptacle concave, enclosing the whole or greater part of the adnate germen. Calyx 5-merous or more rarely (*Mindium*) 8–10-merous; sepals at point of separation extended in reflexed appendages (*Medium, Mindium*) or oftener bare. Corolla campanulate or rarely funnel- or wheel-shaped (*Specularia*), 5–10-lobed or more rarely 5–10-partite, valvate. Stamens free from corolla 5, or more rarely 6–10; filaments free, often dilated at base; anthers introrse, or free, or sometimes coherent in a tube around style and spuriously 1-adelphous. Ovary quite or for the greater part inferior, 2–10-celled, crowned with a disk, thin, rather thick or sometimes (*Adenophora*) deeper cupular or tubular; style divided above into 3–10 stigmatose lobes or branches, sometimes dilated and coherent at margins, sometimes narrow revolute. Ovules ∞, anatropous, inserted on a more or less prominent or subpeltate axile placenta. Fruit quite or partly inferior, capsular, dehiscing near base or higher in valves or single openings, often obconical, turbinate, hemispherical or more rarely (*Specularia*) narrow-oblong or linear. Seeds ∞, albuminous.—Perennial or sometimes annual or biennial herbs; leaves alternate or verticillate, solitary or in variously compound-branched racemes or cymes. (*Temp. or rarely warm reg. of the whole world.*) See p. 317.

2. **Wahlenbergia** SCHRAD.[1]—Flowers[2] of *Campanula*; corolla campanulate, 3–5-merous, or more rarely subrotate; petals sometimes to middle or higher or quite free. Stamens 5, or more

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[1] *Cat. Hort. gœtt.* (1814).—A. DC. *Monogr. Camp.* 129; *Prodr.* vii. 424.—ENDL. *Gen.* n. 3079.—B. H. *Gen. pl.* ii. 555, n. 27.—*Schultesia* ROTH, *Enum. pl. phan. Germ.* 1.—*Cervicina* DEL. *Fl. Égypt.* 7, t. 5, fig. 2.—*Edraianthus* A. DC. *Prodr.* vii. 448.—*Streleskia* HOOK. F. *Hook. Lond. Journ.* vi. 266.

[2] Bluish or rarely white or pink, nutant.

rarely 3, 4, free from corolla; anthers free. Ovary, inferior or in part superior, &c., of *Campanula*. Fruit capsular erect, loculicidally valvate at vertex above persistent calyx. Seed of *Campanula*.—Annual or perennial herbs, sometimes woody at base; leaves alternate or sometimes opposite; inflorescence various same as *Campanula*.[1] (*Temp. and sometimes warm reg. of the whole world.*[2])

3. **Microcodon** A. DC.[3]—Flowers small; sepals subfoliaceous narrow. Corolla tube cylindrical; limb 5-fid, valvate. Stamens free[4] or adnate to corolla;[5] filaments thin. Ovary quite or partly inferior; cells 5, opposite petals; style branches 5, thin, finally revolute. Ovules in cells few. Fruit dehiscing above calyx (like *Wahlenbergia*); septiferous within, opposite sepals[6] Other characters of *Wahlenbergia*.—Annuals; leaves alternate linear; flowers in compound terminal, corymbiform or capituliform cymes. (*South Africa.*[7])

4. **Platycodon** A. DC.[8]—Flowers of *Campanula* (or *Wahlenbergia*); corolla campanulate, 5-lobed, valvate.[9] Stamens free from corolla and inserted with it; filaments dilated at base; anthers introrse free or sometimes slightly coherent at margins.

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[1] Sections of this genus are:

Lightfootia Lhér. *Sert. angl.* 4, t. 4, 5.—Endl. *Gen.* n. 3072.—A. DC. *Prodr.* vii. 417; *Ann. sc. nat.* sér. 5, vi. 326.—B. H. *Gen.* ii. 555, n. 26: corolla 5-partite or quite dialypetalous; cells 3 or 5 alternipetalous; stem sometimes rather shrubby. (*S. and trop. E. cont. and ins. Africa.*)

Heterochænia A. DC. *Prodr.* vii. 441.—Endl. *Gen.* n. 3079[1].—B. H. *Gen.* ii. 556, n. 30: a Mascarene race, stem erect subwoody at base as in the *Wahlenbergias* of St. Helena and Juan Fernandez; fruit as in many species of *Campanula*, furnished with a caducous and unequally dividing pericarp.

Cephalostigma A. DC. *Monogr. Camp.* 117; *Prodr.* vii. 420.—Endl. *Gen.* n. 3073.—B. H. *Gen.* ii. 555, n. 25: stem annual; corolla 5-partite; lobes of style stigmatose rather short and broad obtuse. Natives of trop. Asia, Africa and Brazil.

[2] Spec. about 130. Sm. *Exot. Bot.* t. 45.—Vent. *Malm.* t. 12.—Wight, *Icon.* t. 1175, 1176.—Labill. *N.-Holl.* t. 70.—Clke, *Hook. f. Fl. brit. Ind.* iii. 428 (*Cephalostigma*), 429.—Bak. *Fl. maur.* 183 (*Heterochænia*).—Hemsl. *Oliv. Fl. trop. Afr.* iii. 473 (*Lightfootia*), 477.—Harv. and Sond. *Fl. cap.* iii. 554 (*Lightfootia*), 566.—Hook. f. *Handb. N.-Zeal. Fl.* 169; *Journ. Linn. Soc.* vi. 15.—A. Gray, *Proc. Amer. Acad.* v. 152.—Benth. *Fl. Austral.* iv. 137.—Vtke, *Linnæa*, xxxviii. 700.—Boiss. *Fl. or.* iii. 885; 886 (*Edraianthus*).—Reichb. *Icon. exot.* t. 165; *Iconogr.* t. 480; *Ic. Fl. germ.* t. 1517.—Gren. et Godr. *Fl. de Fr.* ii. 421.—Andr. *Bot. Repos.* t. 238 (*Roella*).—Lodd. *Bot. Cab.* t. 1406.—*Bot. Mag.* t. 691, 782, 6155, 6482, 6613.—Walp. *Ann.* ii. 1040; v. 393.

[3] *Monogr. Camp.* 127, t. 19; *Prodr.* vii. 421, 788.—Endl. *Gen.* n. 3078.—B. H. *Gen.* ii. 556, n. 28.

[4] Sect. *Eumicrocodon* (A. DC.).

[5] Sect. *Cœlotheca* (A. DC.).

[6] In this only distinct from *Wahlenbergia*.

[7] Spec. 3, 4. Deless. *Ic. sel.* v. t. 16.—Harv. and Sond. *Fl. cap.* iii. 564.

[8] *Monogr. Camp.* 125; *Prodr.* vii. 422.—Endl. *Gen.* n. 3077.—B. H. *Gen.* ii. 556, n. 29.

[9] Sometimes duplex. On the symmetry of the flower so changeable, see H. Bn, *Bull. Soc. Linn. Par.* 296.

Ovary inferior, 5-celled; cells opposite lobes of corolla; style concave above; lobes 5, opposite petals, valvate, finally reflexed. Ovules in cells ∞, inserted on a subpeltate placenta affixed to internal angle of cells in the pointed base. Capsule inferior, loculicidal at vertex within calyx; valves septiferous within, opposite sepals.[1] Other characters of *Wahlenbergia.*—A glabrous glaucous perennial herb; leaves alternate or partly subopposite or verticillate; flowers[2] terminal solitary or cymose few. (*North. China, Japan.*[3])

5. *Codonopsis* Wall.[4]—Flowers[5] nearly of *Platycodon* (or *Campanula*); receptacle hemispherical or cupular enclosing the whole or half the ovary. Sepals 5, subfoliaceous, finally not contiguous. Lobes of campanulate or widely tubular corolla 5, valvate.[6] Stamens free from corolla; filaments free remote, dilated at base; cells of broad free anthers remote, introrsely rimose. Ovary 3–5-celled; cells sometimes incomplete; style dilated at apex subpetaloid-3–5-lobed. Fruit dry or slightly fleshy, loculicidally 3–5-valvate at vertex (like *Wahlenbergia*).—Perennial herbs; rhizome tuberous; twigs decumbent or oftener twining; leaves alternate or subopposite, entire or sublobed; flowers terminal or lateral pedunculate, solitary or few cymose.[7] (*Temp. mount. and N.E. Asia.*[8])

6. **Cyananthus** Wall.[9]—Flowers hermaphrodite; receptacle depressed cup-shaped. Calyx subinferior, tubular or inflated, 5-fid. Corolla subinferior, infundibular-campanulate, 5-lobed, valvate or induplicate. Stamens free, inserted with corolla on margin of receptacle; filaments free, dilated at base; anthers introrse ovately oblong, sometimes coherent. Ovary free superior broadly

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[1] Hence only differing from *Wahlenbergia.*

[2] Bluish or white.

[3] Spec. of one form or var.: *P. grandiflorum* A. DC. (*Campanula grandiflora* Jacq.—*Wahlenbergia grandiflora* Schrad.), *P. vernum* Dcne, *P. chinense* Paxt. (*P. autumnale* Dcne).

[4] *Roxb. Fl. ind.* (éd. Car.), ii. 103.—Endl. *Gen.* n. 4075.—B. H. *Gen.* ii. 557, n. 32.—*Glossocomia* Don, *Prodr. Fl. nepal.* 158.

[5] Sometimes 4–6-merous, greenish or dirty-white or bluish, oftener purple-veined.

[6] Papillose and externally hairy at margins.

[7] *Leptocodon* (Hook. f. and Thoms. *Journ. Linn. Soc.* ii. 17 (not Sond.).—B. H. *Gen.* ii. 557, n. 31) appears a sect. of this genus; disc much more developed than in other species and produced in epigynous so called clavulate glandules between the stamens.

[8] Spec. 10–12. Royle, *Ill. pl. himal.* t. 62, 69, fig. 3.—Hook. f. *Ill. pl. hima.* t. 16.—Hook. f. and Thoms. *Journ. Linn. Soc.* ii. 11.—Fr. et Sav. *Enum. Fl. jap.* 276.—Kurz, *Trim. Journ. Bot.* (1873), 195.—Reg. *Gartenfl.* t. 167.—Clke, *Hook. Fl. brit. Ind.* iii. 430.—*Bot. Mag.* t. 4942, 5018, 5372.

[9] *Cat.* n. 1472; *Royle Ill. himal.* 309, t. 69.—Endl. *Gen.* n. 3826 (referred to the *Polemoniaceæ*).—B. H. *Gen.* ii. 557, n. 33.

sessile; cells 3–5, ∞-ovulate; placenta axile linear. Style simple concave at dilated apex and there accompanied with 5 erect finally reflexed lobes. Fruit capsular enclosed by persistent or enlarged calyx, loculicidally 3–5-valved; seeds ∞, oblong.—Annual or perennial herbs with few or many branches from the base dark hairy; leaves alternate, entire or unequally lobed; flowers[1] terminal oftener solitary. (*Temp. mount. India, mount. China.*[2])

7. **Campanumæa** Bl.[3]—Flowers nearly of *Codonopsis*, 4–6-merous; receptacle short, broad and nearly flat; corolla[4] wide-campanulate, after anthesis emarcid or circumscissus above ovary. Stamens free. Germen inferior to corolla, 4–6-celled. Fruit a berry or nearly dry, indehiscent flat or convex, girt to middle or at base with persistent sepals.—Perennial herbs; rhizome tuberous; aerial branches slender or twining; leaves opposite; flowers[5] terminal solitary, sometimes axillar at the end of a short leafless twig. (*E. Asia, Malaya, Himalaya.*[6])

8. **Canarina** L.[7]—Flowers of *Campanula*, 5- or oftener 6-merous; receptacle concave obconical. Sepals inserted at margin of receptacle free, valvate. Lobes of campanulate corolla 5–6, valvate. Stamens free, inserted with perianth; filaments flat; anthers free introrse. Ovary free inferior; cells 5, 6, opposite sepals; partitions incomplete. Ovules in cells ∞, inserted on an axile placenta parietal above with 2 reflexed branches. Berry indehiscent, crowned with calyx, ∞-spermous.—A perennial herb; rhizome tuberous; aerial branches herbaceous subsarmentose loosely and divaricately branched; leaves opposite, petiolate; flowers[8] terminal or in dichotomies solitary pedunculate drooping. (*Canaries.*[9])

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[1] Rather small or showy, bluish.

[2] Spec. 5, 6. Hook. f. and Thoms. *Journ. Linn. Soc.* ii. 19.—Clke, *Hook. f. Fl. brit. Ind.* iii. 433.—*Bot. Reg.* (1847), t. 6.—*Bot. Mag.* t. 6485.

[3] *Bijdr.* 726.—Endl. *Gen.* n. 3074.—A. DC. *Prodr.* vii. 423.—B. H. *Gen.* ii. 557, n. 34.—*Cyclocodon* Griff. *Notul.* iv. 277, t. 481.—Hook. f. and Thoms. *Journ. Linn. Soc.* ii. 17.

[4] Oftener greenish.

[5] Rather large or small.

[6] Spec. 4, 5. Hook. f. and Thoms. *loc. cit.* 9 (part.).—Hook. f. *Ill. pl. Himal.* t. 16.—Clke, *Fl. brit. Ind.* iii. 435.—Maxim. *Bull. Acad. Pétersb.* xii. 67; *Mél. biol.* vi. 268.—*Bot. Mag.* t. 5372 (*Codonopsis*).—*Fl. serr.* t. 1264.—Walp. *Rep.* ii. 710.

[7] *Mantiss.* 148 (*Canaria*).—A. DC. *Monogr. Camp.* 123, t. 4, B; *Prodr.* vii. 422.—Endl. *Gen.* n. 3076.—B. H. *Gen.* ii. 558, n. 35.—*Pernettya* Scop. *Introd.* 150.

[8] Large, showy; corolla golden or reddish (somewhat resembling that of *Cucurbita*, but much oftener 6- than 5-merous).

[9] Spec. 1. *C. canariensis.*—*C. campanulata* Lamk, *Dict.* i. 598.—Curt. *Bot. Mag.* t. 444.—Gærtn. f. *Fruct.* iii. t. 211.—*Fl. serr.* t. 1094.—*Campanula canariensis* L. *Spec.* 238.

9. **Peracarpa** Hook f. and Thoms.[1]—Flowers[2] nearly of *Campanumæa*; corolla campanulate, 5-lobed. Stamens free; filaments narrow; anthers linear. Ovary 3-celled; style branches 3 narrow. Fruit crowned with 5 sepals; pericarp thin indehiscent and unequally raised by enclosed (rather large) ellipsoid oblong seeds.—A rather fleshy creeping herb; leaves alternate ovate petiolate; flowers thinly pedunculate lateral or terminal solitary. (*North. mount. India.*[3])

10. **Trachelium** L.[4]—Flowers nearly of *Campanula*; limb of narrow tubular corolla 5-lobed, valvate, often subglobular in the bud. Stamens inserted with the corolla and free from it; anthers free, sometimes glandular at apex. Ovary inferior, 2- or oftener 3-celled; ovules ∞, inserted on small often peltate placenta. Disk epigynous thin. Style finally exserted, thickened below stigmatose obtusely 3-lobed apex and there often pilose.[5] Fruit capsular, ∞-spermous, dehiscing operculately or valvately between the ribs near the base.—Perennial herbs or subshrubby at base; flowers[6] oftener numerous in terminal or axillar more or less compound-ramose and cymiferous racemes. (*Medit. reg.*[7])

11. **Phyteuma** L.[8]—Flowers oftener sessile; receptacle hemispherical, obconical or oblong, enclosing adnate ovary. Sepals 5, inserted at margin of receptacle free. Petals 5, free or connate at base, sometimes cohering above and separable a little above the base, valvate. Stamens[9] free; filaments oftener dilated at base; anthers free, sometimes coherent at margins, finally free, introrse, 2-rimose. Ovary inferior, 2-[10] or oftener 3-celled; style branches linear, sometimes finally revolute or rarely dilated. Fruit capsular, dehiscing valvately or operculately between the ribs.—Perennial

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[1] *Journ. Linn. Soc.* ii. 26.—B. H. *Gen.* ii. 558, n. 36.

[2] Small, white.

[3] Spec. 1. *P. carnosa* Hook. f. and Thoms.—Clke, *Fl. brit. Ind.* iii. 437.—*Campanula carnosa* Wall. *Cat.* n. 1282; *Roxb. Fl. ind.* (ed. Car.), ii. 202.—A. DC. *Prodr.* vii. 474.

[4] *Gen.* n. 221.—Lamk, *Ill.* t. 126.—Gærtn. *Fruct.* i. 155, t. 31.—A. DC. *Prodr.* vii. 491.—Endl. *Gen.* n. 3087.—B. H. *Gen.* ii. 563, n. 53.

[5] Nearly as in *Lobelia.*

[6] Small, bluish or white.

[7] Spec. 4, 5. Guss. *Syn. Fl. sicul.* i. 252.—Boiss. *Diagn. or.* ser. 2, iii. 117; *Fl. or.* iii. 960.—*Bot. Reg.* t. 72.—Walp. *Ann.* ii. 1052.

[8] *Gen.* n. 220.—Gærtn. *Fruct.* i. 149, t. 30.—A. DC. *Prodr.* vii. 450.—Endl. *Gen.* n. 3082.—B. H. *Gen.* ii. 561, n. 48.—*Rapunculus* Adans. *Fam. des pl.* ii. 134.

[9] Cf. Magn. *Verh. Bot. Ver. Prov. Brand.* xxi.

[10] Second cell oftener smaller.

herbs; leaves basal often rosulate; the rest smaller remote alternate; flowers[1] in dense, sometimes capituliform spikes, more rarely racemose or subumbellate, or sometimes glomerate along virgate, simple or branched stem; bracts 1-flowered; the lower sometimes approximate in an involucre; lateral bracteoles 2 or 0.[2] (*Europe, temp. Asia, Medit. reg.*[3])

12. **Pentaphragma** Wall.[4]—Flowers[5] 5-merous; receptacle long obconical. Sepals 5, obtuse, subvalvate. Lobes of campanulate corolla 5, rather thick induplicately valvate. Stamens 5, free from corolla; filaments short; anthers oblong introrse, coherent to each other or finally free. Ovary inferior, 3–5-celled, nearly flat or rather concave at apex; style short, shortly dilated to apex and slightly hollowed and obtusely 3–5-crenate at top. Fruit a berry, crowned with calyx; seeds ∞, reticulately rugose, intermixed with rather fleshy placentæ, albuminous.—A rather fleshy perennial herb, procumbent at base; leaves alternate, unsymmetrical, more or less unequal at base, sometimes broadly falciform, nervate; flowers inserted in a double series on a common thick curved receptacle, terminal or lateral and shortly pedunculate, crowded into a scorpioid cyme; each laterally bracteate. (*Malay Archip.*[6])

13. **Musschia** Dumort.[7]—Flowers of *Campanula* 5-merous; staminal filaments narrow; anthers free pointed or cuspidate.

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[1] Bluish, white or purplish.

[2] Sections of the genus are:

Petromarula A. DC. *Monogr. Campan.* 209; *Prodr.* vii. 456, scil. *P. pinnatum* L.: leaves pinnatisect and style dilated at apex globose (*Crete*).

Trachanthelium Schur, *Enum. pl. Transsylv.* 431, scil. sect. *Podanthus* G. Don: flowers interruptedly glomerate along branches or stem or compound spicate-racemose.

Physoplexis Schur, *Enum. pl. Transsylv.* 431: flowers subumbellate; petals coherent.

Cylindrocarpa Regl, *Act. Hort. petrop.* v. 258, type of which is *Phyteuma Sewezowii* Regl, *Pl. Semenov.* n. 671: a perennial many-stemmed Turkestan herb; leaves few and small linear-lanceolate denticulate; flowers solitary terminal, "corolla of *Phyteuma*, capsule of *Specularia*."

[3] Spec. about 35. Jacq. *Fl. austr.* App. t. 50. —Sibth. et Sm. *Fl. græc.* t. 217–219; t. 220 (*Petromarula*).—Desf. *Ann. Mus.* xi. t. 5.—Vent. *Jard. Cels*, t. 52 (*Petromarula*).—Jaub. et Sp. *Ill. pl. or.* t. 420 (*Petromarula*).—Labill. *Icon. pl. Syr. Dec.* 11, t. 6 (*Campanula*).—W. et Kit. *Pl. rar. hung.* t. 14.—Reichb. *Iconogr.* t. 214, 249, 250, 348, 363–365; *Ic. Fl. germ.* t. 1579–1587.—Clke, *Hook. Fl. brit. Ind.* iii. 438.—Boiss. *Fl. or.* iii. 945 (*Podanthus*), 957 (*Petromarula*), 958.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 285.—Gren. et Godr. *Fl. de Fr.* ii. 400.—Walp. *Rep.* vi. 382; *Ann.* ii. 1041.

[4] *Cat.* n. 1313.—B. H. *Gen.* ii. 558, n. 37.

[5] Small, white.

[6] Spec. 1. *P. begoniæfolium* Wall.—Kurz, *Journ. As. Soc.* (1877), ii. 201.—Hook. f. and Thoms. *Journ. Linn. Soc.* ii. 26.—Clke, *Fl. brit. Ind.* iii. 337.—*Phyteuma begonifolium* Roxb. *H. beng.* 85; *Fl. ind.* i. 505.—Jack, *Hook. Bot. Misc.* i. 276, t. 57.

[7] *Comm. bot.* 28.—A. DC. *Prodr.* vii. 495.—B. H. *Gen.* ii. 560, n. 46.

Ovary 5-celled; lobes of 5-fid style elongate. Fruit capsular, crowned with 3-nerved sepals, obconical or hemispherical, strongly ribbed vertically; pericarp thin between ribs and broken into many unequal transverse superposed clefts.—Perennial or subshrubby herbs; leaves basal rosulate dentate; the cauline few smaller; flowers[1] in compound cymiferous racemes. (*Madeira.*[2])

14. **Roella** L.[3]—Flowers generally 5-merous; receptacle short tubular or oblong. Sepals 5, free, often dentate. Corolla funnel- or bell-shaped, valvate. Stamens inserted in corolla and free from it; filaments dilated; anthers free introrse. Germen inferior; cells 2, ∞-ovulate; style shortly 2-fid at stigmatose apex. Fruit capsular, closed above by hardened base of style or from the fall of the latter dehiscing operculately, otherwise laterally and longitudinally rimose.—Herbs or undershrubs; leaves alternate narrow, sometimes rather stiff ericoid, entire or ciliately dentate; flowers[4]; terminal solitary or glomerate between the leaves sessile. (*South Africa.*[5])

15. **Prismatocarpus** Lhér.[6] — Flowers 5-merous; sepals superior, free or more or less connate. Lobes of broadly bell- or funnel-shaped corolla 5, valvate. Ovary inferior, 2-celled; ovules ∞, often ascending; style 2-lobed at apex. Fruit capsular, crowned with persistent base of style, longitudinally rimose;[7] seeds few oblong glabrous.—Perennial herbs or shrubby at base, glabrous; leaves alternate; flowers terminal solitary or in more or less compound cymes.[8] (*South Africa.*[9])

16? **Rhigiophyllum** Hochst.[10]—"Flowers 5-merous; receptacle ovoid; sepals narrow. Corolla tube very long narrow; limb open, 5-fid; lobes oblong. Stamens deeply adnate to tube of corolla; anthers free. Ovary inferior, 3-celled; ovules ∞; style 3-fid at stigmatose apex; lobes recurved. Fruit capsular, closed by persistent base of style.—A very rigid shrub;[1] leaves imbricate in 4 rows entire squamose; flowers[2] subcapitate; bracts of terminal capitule foliaceous rigid; pedicels 2-bracteolate."[3] (*S. Africa.*[4])

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[1] Yellow or ochrous, showy.

[2] Spec. 2. Jacq. *H. schœnbr.* t. 472.—Vent. *Jard. Malm.* t. 116.—Lowe, *Fl. mader.* i. 574; *Hook. Lond. Journ.* viii. 298.—*Bot. Reg.* t. 57. —*Bot. Mag.* t. 5606, 6656.

[3] *Gen.* n. 219; *H. Cliff.* t. 35.—Gærtn. *Fruct.* t. 31.—A. DC. *Prodr.* vii. 445, 790.—Endl. *Gen.* n. 3081.—B. H. *Gen.* ii. 558, n. 38.

[4] Sometimes rather large showy, bluish.

[5] Spec. 10, 11. Thunb. *L. f. Suppl.* 143.—Lhér. *Sert. angl.* t. 6.—Harv. and Sond. *Fl. cap.* iii. 591.—Eckl. et Zeyh. *Enum.* 386, 2408. —Lodd. *Bot. Cab.* t. 1156.—Buch. *Dec.* 2, t. 7.—*Bot. Reg.* t. 378.—*Fl. serr.* t. 517.

[6] *Sert. angl.* 1, t. 3 (part.).—A. DC. *Monogr. Camp.* t. 20.—Endl. *Gen.* n. 3086.—B. H. *Gen.* ii. 559, n. 39.

[7] "Or more rarely base of style operculately deciduous finally open?" (B. H.)

[8] ? A sect. of *Roella*, fruit longer.

[9] Spec. about 15. Harv. and Sond. *Fl. cap.* iii. 585.—Vtke, *Linnæa*, xxxviii. 701.

[10] *Flora* (1842), 232.—Endl. *Gen.* Suppl. iii. 72.—B. H. *Gen.* ii. 559, n. 42.

17. **Githopsis** Nutt.[5]—Flowers regular; receptacle obconical-linear; folioles of calyx 5, linear. Corolla tubular-campanulate, 5-lobed. Stamens 5; filaments dilated at base; anthers free. Ovary inferior, 3-celled; septa sometimes disappearing; style 3-fid at apex. Capsule clavate, 10-costate, dehiscing operculately at vertex among persistent sepals.—An annual; leaves alternate narrow; flowers terminal or opposite leaves cymose. (*S. Africa.*[6])

18? **Treichelia** Vatke.[7]—" Flowers 5-merous; receptacle subglobular; sepals free narrow. Corolla tube cylindrical; limb short 5-fid. Stamens free from corolla; filaments scarcely dilated. Ovary inferior, 2-celled, few-ovulate; stigmatic lobes 2 linear. Fruit inferior, opening vertically between persistent sepals by aperture closed by hardened base of style; dissepiment deciduous with operculum.—A branching hirsute herb;[8] leaves alternate linear; flowers small capitately-glomerate at ends of branches; linear bracts intermixed." (*S. Africa.*[9])

19. **Siphocodon** Turcz.[10]—" Flowers 5-merous; ovary inferior. Sepals superior, free. Lobes of thin tubular corolla 5. Stamens 5, deeply adnate to corolla tube; filaments filiform; anthers free. Ovarian cells 3; style 3-fid at apex. Ovules in cell pendulous from apex. Fruit crowned with calyx, dry, dehiscing by fissure above calyx; seeds in cells generally solitary.—A glabrous virgate herb or undershrub; branches rush-like nearly leafless; leaves reduced to linear scales;[11] flowers irregularly subracemose." (*S. Africa.*[12])

20. **Jasione** L.[13]—Flowers subregular; folioles of superior calyx

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[1] " Habit of *Roella*."

[2] " Purple."

[3] A plant unknown to all authors, and apparently not to be found in herb. Hochstett.

[4] Spec. 1. *R. squarrosum* Hochst.—Walp. *Rep.* vi. 388.

[5] *Trans. Amer. Phil. Soc.* ser. 2, viii. 258.—Vtke, *Linnæa*, xxxviii. 714.—A. Gray, *Bot. Calif.* i. 446.—Walp. *Ann.* ii. 1052, not *Hort. amer. cantab.*

[6] Spec. 1, californica, *G. specularioides* Nutt. — *G. calycina* Benth. — *G. pulchella* Vtke.

[7] *Linnæa*, xxxviii. 700.—B. H. *Gen.* ii, 559, n. 41.

[8] " Habit of *Microcodon*."

[9] Spec. 1. *Leptocodon longebracteatum* Sond. *Fl. cap.* iii. 584.—*Microcodon longebracteatum* Buek. *Eckl. et Zeyh. Enum.* 2667, which by itself should hardly constitute a genus.

[10] *Bull. Mosc.* (1852), ii. 175.—B. H. *Gen.* ii. 560, n. 44.

[11] Small, bluish.

[12] Spec. 1. *S. spartioides* Turcz. *loc. cit.*—Harv. and Sond. *Fl. cap.* iii. 597.

[13] *Gen.* n. 1005.—Gærtn. *Fruct.* t. 30.—A. DC. *Prodr.* vii. 415.—Endl. *Gen.* n. 3071.—B. H. *Gen.* ii. 554, n. 24.—*Orilla* Adans. *Fam. des pl.* ii. 134.

5, narrow, free or nearly so. Petals of subregular corolla 5, free or connate at base, valvate. Stamens 5, epigynous with corolla and quite or nearly free from it; filaments not dilated; anthers introrse, coherent on both sides at base, otherwise free, longitudinally rimose. Ovary inferior, rather concave above, 2-celled; style erect, shortly 2-lobed at dilated apex. Ovules on axile shortly stipitate placentas few or ∞. Fruit capsular, dehiscing valvately at flat or rather concave vertex between persistent calyx and shrivelled corolla. Seeds few or ∞.—Perennial, biennial or rarely annual herbs, erect or prostrate, glabrous or pilose, slightly lactescent; leaves alternate or rosulate; flowers[1] in terminal capituliform umbels; pedicels slender, oftener short; inner bracts foliaceous involucrant, often connate at base; outer flowers with small or no bracts. (*Temp. Europe, Medit. reg.*[2])

21. **Merciera** A. DC.[3]—Flowers[4] 4–5-merous; sepals epigynous rather thick. Corolla tubular; limb little expanded, 4–5-lobed, valvate. Stamens 4, 5; filaments slender free from corolla or inserted at bottom of tube; anthers free or contiguous at margin introrse. Ovary inferior; dissepiment between 2 cells more or less or very incomplete; ovules in cells 2, collaterally suberect; micropyle inferior; style more or less dilated or shortly 2-lobed at apex. Fruit dry, crowned with calyx, indehiscent (or rimose?); seeds 1–4.—Low shrubs or undershrubs; leaves rather rigid, crowded or fasciculate; flowers in axils, especially the upper ones, solitary, sessile or shortly stipitate, with 2 lateral bracts (often persistent). (*S. Africa.*[5])

II. SPHENOCLEÆ.

22. **Sphenoclea** Gærtn.—Flowers hermaphrodite regular; receptacle subhemispherical. Sepals of superior calyx 5, quincuncially imbricate. Corolla campanulate; tube rather broad; lobes

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[1] Bluish or whitish.

[2] Spec. 4, 5 (?). Cav. *Icon.* t. 148.—Reichb. *Icon. Fl. germ.* t. 1578.—Boiss. *Voy. Esp.* t. 119; *Diagn. or.* ser. 2, vi. 120; *Fl. or.* iii. 885.—Willk. et Loe, *Prodr. Fl. hisp.* ii. 280. —Gren. et Godr, *Fl. de Fr.* ii. 398.—*Bot. Reg.* t. 505.—*Bot. Mag.* t. 2198.—Walp. *Rep.* ii. 709; *Ann.* ii. 1039.

[3] *Monogr. Campanul.* 369, t. 5; *Prodr.* vii. 587, 791.—Deless. *Ic. sel.* v. t. 17.—Endl. *Gen.* n. 3091.—B. H. *Gen.* ii. 560, n. 43.

[4] White, bluish or violet.

[5] Spec. 3, 4. Thunb. *Prodr. Fl. cap.* 38, 174 (*Roella*).—Eckl. et Zeyh. *Enum.* 2418–2420. —Harv. and Sond. *Fl. cap.* iii. 595.

of limb 5, imbricate. Stamens 5; anthers short introrse free, 2-rimose. Ovary adnate within receptacle, free above, 2-celled; style short, shortly 2-lobed at stigmatose apex. Ovules in cells ∞, inserted on thick axile shortly stipitate placenta, anatropous. Fruit semi-superior, capsular, dehiscing circumscissilely at margin of receptacle. Seeds ∞, minute oblong albuminous.—A glabrous (marshy) annual; leaves alternate entire; flowers in terminal or lateral stipitate, simple or rarely few-branched dense spikes; each with 1 bract and 2 lateral bracteoles. (*All trop. reg.*)—See p. 327.

III. LOBELIEÆ.

23. **Lobelia** L.—Flowers hermaphrodite or sometimes polygamous, generally resupinate, more or less irregular; receptacle cupular, obconical, obovoid or more rarely elongate, enclosing ovary quite or more or less adnate (sometimes nearly free). Calyx 5-partite or 5-fid; lobes subequal or unequal. Petals of straight or variously curved corolla either free and coherent at margins, or more or less solute or coadunate, erect or patent; before floration valvate or subinduplicate. Stamens 5; filaments free from corolla or adnate quite at base; anthers free or marginally coherent, glabrous or hispid at back; all or 2 penicillate at apex, or subequal, or 2 shorter. Ovary 2-celled; placentas axile thick, ∞-ovulate; style often dilated at base, 2-lobed at stigmatose apex. Fruit inferior or more or less free, capsular, loculicidally 2-valvate at apex within calyx; seeds ∞, albuminous.—Herbs, undershrubs, shrubs or small trees; habit various; oftener with a milky juice; leaves alternate; flowers in axils of leaves or bracts oftener solitary, sometimes in a terminal raceme; bracteoles small or 0. (*All warm and temp. reg.*)—See p. 328.

24? **Laurentia** MICHELI.[1]—Flowers nearly of *Lobelia;* folioles of corolla valvate coalite in a tube, the anterior sometimes shortly free or not solute. Staminal filaments not contiguous, all or two more or less coalite with petals and these coadunate; anthers dissimilar; 2 shorter setose or pilose at apex. Ovary quite or partly inferior, 2-celled, sometimes crowned with thin glandular disk; lobes of style (of *Lobelia*) 2 very short and girt below with a pilose crown. Capsular fruit, &c., of *Lobelia*.—Low herbs, sometimes creeping, slenderly branched, more rarely ascending; leaves alternate narrow, sometimes rosulate at base; flowers[1] axillar solitary or terminally racemose; peduncles sometimes scape-like, 1-florous, 1-bracteate.[2] (*Medit. reg.*, *N. America*, *S. Africa*.[3])

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[1] *Nov. gen.* 18, t. 14.—NECK. *Elem.* i. 131.—A. DC. *Prodr.* vii. 409 (part.).—ENDL. *Gen.* n. 3060.—DELESS. *Icon. sel.* v. t. 4.—B. H. *Gen.* ii. 549, n. 11.—*Solenopsis* PRESL, *Prodr. Monogr. Lobel.* 32.—*Enchysia* PRESL, *loc. cit.* 40.—DELESS. *loc. cit.* t. 13.—A. DC. *loc. cit.* 408 (part.).—? *Porterella* TORR. *Hayd. Geol. Surv. Mont. Rep.* 488 (ex B. H.).

25. **Siphocampylus** Pohl.[4]—Flowers nearly of *Lobelia;* receptacle hemispherical or oftener obconical. Sepals various. Tube of straight or incurved corolla entire or divided above the middle, sometimes 2-labiate. Stamens affixed to tube at base; anthers 2 penicillate at apex. Capsule loculicidally 2-valvate at vertex between persistent sepals. Other characters of *Lobelia*.—Herbs, undershrubs or shrubs, sometimes climbing, glabrous or variously clothed; leaves alternate or verticillate, entire, dentate, or sometimes pinnately lobed or dissected; flowers[5] axillar solitary or in terminal sometimes corymbose racemes; pedicels minutely or not bracteolate. (*Trop. centr. andine and antillane America*.[6])

26. **Centropogon** Presl.[7]—Flowers of *Siphocampylus*; lobes of straight or curved corolla subequal; tube variously divided. Tube of andrœcium adnate to lowest part of corolla or more rarely free; anthers 3, the largest glabrous or variously pilose; the 2 smaller penicillate at apex, or sometimes all bare (*Burmeistera*[8]). Fruit a berry, indehiscent. Other characters of *Siphocampylus*.—

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[1] Small, bluish or violet.

[2] A genus scarcely different from *Lobelia*; for the petals cohere only at the margins by means of the filaments.

[3] Spec. 8–10. Presl, *Symb.* i. t. 20.—Sibth. *Fl. græc.* t. 231 (*Lobelia*).—Harv. and Sond. *Fl. cap.* iii. 551 (*Enchysia*), 552.—A. Gray, *Syn. Fl. N.-Amer.* ii. 8.—Boiss. *Fl. or.* iii. 885.—Willk. et Lge, *Prodr. Fl. hisp.* ii. 278.—*Bot. Mag.* t. 2079; 2590 (*Lobelia*); 3609 (*Enchysia*).—Walp. *Ann.* ii. 1037.

[4] *Pl. bras. Icon.* ii. 104, t. 160–167, 169–179.—Endl. *Gen.* n. 3059.—A. DC. *Prodr.* vii. 397.—B. H. *Gen.* ii. 517, n. 8.—*Lobelia* Presl, *Prodr. Monogr. Lobel.* 33.—*Byrsanthes* Presl, *loc. cit.* 41.—*Canonanthus* G. Don, *Gen. Syst.* iii. 718.—*Cremochilus* Turcz. *Bull. Mosc.* (1852), ii. 174.

[5] Red, purplish, cochineal or sometimes greenish.

[6] Spec. about 80–90. H. B. K. *Nov. gen. et spec.* iii. t. 268, 271 (*Lobelia*).—Griseb. *Fl. brit. W.-Ind.* 385.—Kan. *Mart. Fl. bras. Lobel.* 144, t. 43, 44, 65.—Hook. *Icon.* t. 716.—Moric. *Pl. nouv. Amér.* t. 85.—Vtke, *Linnæa*, xxxviii. 728.—*Bot. Mag.* t. 3973, 4015, 4178, 4286, 4331, 5631.—*Fl. serr.* t. 219, 544, 648, 763.—Paxt. *Fl. garden.* ii. 33, t. 44.—Leme, *Jard. fl.* iv. 425.—Walp *Rep.* ii. 708; vi. 378, 733; *Ann.* i. 468; ii. 1034; iii. 917; v. 390.

[7] *Prodr. Monogr. Lobel.* 48.—A. DC. *Prodr.* vii. 344.—Endl. *Gen.* n. 3069.—B. H. *Gen.* ii. 547, n. 7.

[8] Karst. *Linnæa*, xxviii. 444.—B. H. *Gen.* ii. 547, n. 6.

Herbs, undershrubs or shrubs, sometimes climbing; leaves alternate, entire, dentate or dissected; flowers[1] solitary in axils of leaves or bracts[2]; pedicels sometimes elongate (*Burmeistera*), minutely or not bracteolate. (*Centr. and warm esp. west. N. and S. America.*[3])

27. **Delissea** GAUDICH.[4]—Flowers irregular; receptacle hemispherical, ovoid or turbinate. Calyx 5-merous; lobes foliaceous, acute, valvate or more or less imbricate, sometimes dentiform or obsolete. Corolla of *Lobelia*. Stamens 5 (of *Lobelia*); tube free from corolla or sometimes adnate to its base. Fruit a berry indehiscent. Other characters of *Centropogon* or *Lobelia*.—Small trees or shrubs; trunk simple (*Rollandia*) or more or less branched above, impressed with scars of fallen leaves; leaves oftener crowded at top, often large, entire, sinuate, dentate or sometimes pinnatifid or pinnatipartite; flowers[5] axillar more or less compound racemose.[6] (*Sandwich Is.*[7])

28 ? **Apetahia** H. BN.[8]—Flowers nearly of *Delissea* (or *Brighamia*); corolla slightly irregular, hence longitudinally divided. Ovary inferior, 1-celled; with 2 parietal placentas, ∞-ovulate; style longer than anthers, undivided at stigmatose apex, girt with corona of hairs. Fruit dry (indehiscent ?). Other characters of *Delissea*.—A shrub; stem spongy, simple or sparsely branched, scarred; leaves alternate coriaceous crenate, collected at top of plant; flowers[9] axillar; peduncle 2-bracteolate.[10] (*Raiatea Is.*[11])

29. **Brighamia** A. GRAY.[12]—Flowers subregular; receptacle

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[1] Red, yellowish or more rarely greenish.

[2] Occasionally terminal-racemose.

[3] Spec. about 90. H. B. K. *Nov. gen. et spec.* iii. t. 269, 270 (*Lobelia*).—POHL, *Icon.* t. 168 (*Siphocampylos*). — REGL, *Gartenfl.* t. 75. — GRISEB. *Fl. brit. W.-Ind.* 385.—KAN. *Mart. Fl. bras. Lobel.* 132, t. 39.—BENTH. *Pl. Hartweg.* 77 (*Lobelia*).—*Fl. serr.* t. 362, 802.—WALP. *Rep.* ii. 709; vi. 373.

[4] *Freycin. Voy. Bot.* 457, t. 76–78.—A. GRAY, *Proc. Amer. Acad.* vii. 178.—B. H. *Gen.* ii. 546, n. 4.

[5] Large or moderate.

[6] Sect. in gen. 4, which have hitherto been distinct genera and for the characters of which cf. A. GRAY, *loc. cit.* 177: 1. *Eudelissea*: sepals dentiform or obsolete; trunk generally branched.—2. *Clermontia* (GAUD. *Freyc. Voy. Bot.* 459, t. 71–73.—B. H. *Gen.* ii. 546, n. 5): sepals subequal to or shorter than corolla; trunk generally branched.—3. *Cyanea* (GAUDICH. *Freyc. Voy. Bot.* 455, t. 75.—B. H. *Gen.* ii. 546, n. 3.—*Macrochilus* PRESL, *Prodr. Monogr. Lobel.* 47.—*Kittelia* REICHB. *Pfl. Syst.* 186.—ENDL. *Gen.* 1392): sepals foliaceous, imbricate; trunk generally branched. — 4. *Rollandia* (GAUDICH. *Freyc. Voy. Bot.* 458, t. 74.—B. H. *Gen.* ii. 546, n. 2): sepals short or dentiform; trunk simple.

[7] Spec. about 45. GAUDICH. *Voy. Bonite*, t. 77 (*Delissea*), t. 75–76 (*Rollandia*).—A. GRAY, *Proc. Amer. Acad.* vii. 177 (*Rollandia*), 178 (*Delissea*), 183 (*Cyanea*), 184 (*Clermontia*).—WAWRA, *Flora* (1878), 7, 30 (*Delissea*), 31, 44 (*Rollandia*), 47 (*Clermontia, Cyanea*).

[8] *Bull. Soc. Linn. Par.* 310.

[9] Large showy, white.

[10] ? Very near *Isotoma*; BENTHAM (*Gen.* ii. 546).

[11] Spec. 1: *I. raiateensis* H. BN.

[12] *Proc. Amer. Acad.* vii. (1868), 185.—B. H. *Gen.* ii. 545, n. 1.

oblong concave, 10-costate; sepals unequal. Corolla very long-tubular; lobes of limb scarcely unequal, finally patent. Stamens coalite in a tube at bottom of corolla; anthers 5 long-penicillately setose. Ovary inferior, 2-celled (of *Delissea*); placentas peltate, ∞-ovulate; style very elongate, 2-lobulate at stigmatose apex. Fruit fleshy. Other characters of *Delissea*.—A glabrous rather fleshy tree; stem simple; leaves (very large) collected at apex alternate entire; flowers[1] in short axillar racemes few. (*Sandwich Is.*[2])

30. **Isotoma** LINDL.[3]—Flowers nearly of *Delissea* (or *Lobelia*); sepals narrow or linear. Corolla tube undivided or shortly divided anteriorly; lobes of limb sometimes subequal, valvate or induplicate. Stamens inserted at or above middle of corolla tube; filaments variously connate or oftener free; anthers 3 rather larger muticous; 2 posterior penicillate at apex or crowned with a rather stiff hair. Ovary quite or mostly inferior; style shortly 2-labiate and girt with hairs below lips. Capsular, vertically loculicidal fruit, &c., of *Lobelia*.—Lactescent herbs, sometimes subshrubby; leaves alternate, dentate or pinnatifid; flowers[4] axillar or, from change of leaves to bracts, terminally racemose.[5] (*Oceania, W. Indies.*[6])

31. **Lysipoma** H. B. K.[7]—Flowers nearly of *Laurentia* (or *Lobelia*). Corolla tube subentire[8] or shortly divided. Stamens epigynous; filaments shortly (*Eulysipoma*), or long (*Rhizocephalum*[9]) coalite with corolla tube, thence to a greater or less extent solute; anthers 2 penicillate or 1-setose at apex. Ovary 2-celled; cells more or less complete; one sometimes (*Eulysipoma*) abortive. Fruit a pyxis dehiscing by vertical aperture.—Dwarf cæspitose or creeping herbs; flowers[10] solitary sessile or shortly pedunculate between leaves. (*And. America.*[11])

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[1] White, large (to 6 in. in length).

[2] Spec. 1. *R. insignis* A. GRAY.—H. MANN, *Mem. Bost. Soc. Nat. Hist.* i. 531, t. 23.

[3] *Bot. Reg.* t. 964.—ENDL. *Gen.* n. 3060 c.—A. DC. *Prodr.* vii. 412.—B. H. *Gen.* ii. 548, n. 10.—*Hippobroma* G. DON, *Gen. Syst.* iii. 917 (not ECKL. et ZEYH.).

[4] White or bluish.

[5] Better a sect. of *Lobelia*? (R. BR.)

[6] Spec. 6, 7. JACQ. *H. vindob.* t. 27 (*Lobelia*).—GAUDICH. *Freyc. Voy. Bot.* t. 70.—HOOK. F. *Fl. tasm.* t. 70 (*Lobelia*).—KAN. *Mart. Fl. bras. Lobel.* 156.—BENTH. *Fl. Austral.* iv. 134.—*Bot. Reg.* t. 1200 (*Lobelia*).—*Bot. Mag.* t. 2702, 3075 (*Lobelia*), 5073.

[7] *Nov. gen. et spec.* iii. 318, t. 266, fig. 2, 267.—A. DC. *Prodr.* vii. 349.—ENDL. *Gen.* n. 3053.—B. H. *Gen.* ii. 549, n. 13.

[8] Petals moderate 2 deeply connate.

[9] WEDD. *Chlor. andin.* ii. 11, t. 46.—B. H. *Gen.* ii. 549, n. 12.

[10] Small or very small, whitish.

[11] Spec. 8–10. HOOK. *Lond. Journ.* vi. t. 9.—BENTH. *Pl. Hartw.* 137 (*Lobelia*).—WEDD. *loc. cit.* ii. 15, t. 45.—WALP. *Rep.* ii. 706; *Ann.* i. 466.

32. **Pratia** Gaudich.[1]—Flowers nearly of *Lysipoma*; tube of more or less oblique corolla divided to base (*Eupratia*, *Piddingtonia*, *Colensoa*[2]) or more rarely (*Hypsela*[3]) subentire.[4] Ovary inferior, 2-celled; style shortly (*Eupratia*, *Hypsela*) or long and more broadly (*Colensoa*) 2-lobed. Fruit indehiscent subbaccate; pericarp thin or membranous.—Dwarf herbs, prostrate or creeping, or more rarely (*Speirema*[5], *Colensoa*) erect or shrubby at base; leaves alternate, oftener crenate or dentate; flowers[6] solitary; peduncle 1-flowered; or more rarely (*Colensoa*) in a short terminal raceme.[7] (*And. America*, *Australia*, *N. Zealand*, *trop. Asia.*[8])

33. **Downingia** Torr.[9]—Flowers (nearly of *Lobelia*) resupinate; receptacle tubular linear. Sepals 5, unequal or sometimes subequal, free. Corolla tube short; lobes 5, valvate; 2 anterior narrower, concoloured; 3 posterior broader, spotted, connivent in a lip. Stamens (of *Lobelia*); filaments connate in a tube; anthers 5, basifixed erect, valvate, 2 with an apical hair. Ovary inferior, adnate to receptacular cavity, 2-celled; dissepiments thin, sometimes partly vanishing; ovules ∞, anatropous ascending inserted on subfiliform placentas. Style shortly 2-lobed at stigmatose apex. Fruit capsular, "dehiscing longitudinally by 1–3 fissures; seeds ∞, oblong-fusiform albuminous; cotyledons conferruminate."—Glabrous annuals; leaves alternate entire; the upper passing more or less into bracts; flowers[10] terminal spicate or axillar to upper leaves. (*California*, *Chili.*[11])

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[1] *Freyc. Voy. Bot.* (1826), 456, t. 79.—A. DC. *Prodr.* vii. 340.—Endl. *Gen.* n. 3063.—B. H. *Gen.* ii. 550, n. 16.—*Piddingtonia* A. DC. *loc. cit.* 341.

[2] Hook. f. *Fl. N.-Zel.* i. 156; *Gen.* ii. 551, n. 17.

[3] Presl, *Prodr. Monogr. Lobel.* (1836), 45.

[4] Two middle petals closely coherent.

[5] Hook. f. et Thoms. *Journ. Linn. Soc.* ii. 27.

[6] Whitish, pink or bluish, sometimes by abortion polygamo-diœcious, moderate or small.

[7] Sect. in gen. 4 : 1. *Eupratia* (*Piddingtonia*), corolla divided, fruit rather fleshy, flowers solitary. — 2. *Colensoa*, stem erect, corolla divided, fruit rather fleshy, flowers racemose. —3. *Speirema*, stem erect, flowers solitary, corolla divided.—4. *Hypsela*, corolla not divided, stem dwarf, flowers solitary; pericarp generally thinly membranous.

[8] Spec. about 20. H. B. K. *Nov. gen. et spec.* iii. t. 320, t. 266, fig. 1 (*Lysipoma*).—C. Gay, *Fl. chil.* iv. 320.—Hook. *Icon.* t. 555 (*Lobelia*).—Hook. f. *Handb. N.-Zeal. Fl.* 171; *Fl. tasm.* t. 69 B (*Lobelia*); *Fl. antarct.* t. 29.—Kan. *Mart. Fl. bras. Lobel.* 135, t. 40.—Wedd. *Chl. andin.* ii. 9, t. 45.—Benth. *Fl. Austral.* iv. 132.—Clke, *Hook. f. Fl. brit. Ind.* iii. 422.—Walp. *Rep.* vi. 372.

[9] *Whipple Exp. Bot.* 60 (116).—B. H. *Gen.* ii. 550, n. 15.—*Clintonia* Dougl. *Bot. Reg.* t. 1241 (not Rafin.).—A. DC. *Prodr.* vii. 347.

[10] White, violet or bluish; corolla lobes 3 sometimes white- or yellow-spotted.

[11] Spec. about 3. Sweet, *Brit. Fl. Gard.* ser. 2, t. 412 (*Clintonia*).—A. Gr. *Bot. Calif.* i. 444.—*Bot. Reg.* t. 1241; 1909 (*Clintonia*).—*Bot. Mag.* t. 6527.—*Fl. serr.* sér. 2, i. 33.—Paxt. *Mag. bot.* iv. 145.—Walp. *Rep.* iv. 374.

34. **Heterotoma** Zucc.[1]—Flowers very irregular; receptacle unequally turbinate or subglobular, with a longer or shorter spur. Sepals 5, of which 2 inserted at top of spur and far distant from the rest; all acute, erect or recurved. Corolla unequal at base and thence long produced in a horizontal or deflexed spur covering the spur of the receptacle; tube hence divided; lobes of limb 5, unequal or subequal. Stamens 5, the filaments of 2 adnate at decurrent base to concavity of receptacular spur; all finally coalite in an erect tube. Anthers coalite, 2 penicillate at vertex. Ovary inferior, 2-celled; style shortly 2-lobed stigmatose at apex and there girt with a small crown. Ovules in cells ∞, inserted on septal placentas. Fruit inferior, capsular, very oblique at top, loculicidally 2-valvate.—Annual or perennial herbs, sometimes subshrubby at base; leaves alternate; flowers[2] axillar to bracts and in a loose terminal raceme.[3] (*Mexico.*[4])

IV? CYPHIEÆ.

35. **Cyphia** Berg.—Flowers slightly irregular; receptacle hemispherical or obconical, enclosing adnate ovary quite or partly inferior. Sepals 5, inserted at margin of receptacle, nearly equal. Petals 5, nearly equal, free or sometimes partly coalite in 2 lips, valvate. Stamens 5, inserted with and free from petals; anthers free, introrse, 2-rimose. Ovary inferior or in part superior, 2-celled; style oblique or 2-lobed at stigmatose apex. Ovules ∞, inserted on septal placenta. Fruit capsular, septicidally and loculicidally valvate at vertex between persistent sepals. Seeds ovoid or angular, albuminous.—Perennial herbs, erect or twining; leaves alternate, the lower sometimes rosulate, entire or variously incised; the cauline sometimes reduced to bracts; flowers solitary to leaves or bracts, sometimes in a terminal spike; bracteoles small 1, 2 or 0. (*S. and trop. E. Africa.*)—See p. 336.

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[1] *Flora* (1832), ii. *Beibl.* 100.—Endl. *Gen.* n. 3062; *Iconogr.* t. 53.—Car. *Ann. sc. nat.* sér. 4, xi. 269.—B. H. *Gen.* ii. 553, n. 19.—*Myopsis* Presl, *Prodr. Monogr. Lobel.* 8.

[2] Red, golden or bluish.

[3] A genus closely resembling *Lobelia* except in the marked formation of the receptacle.

[4] Spec. 4. Hook. and Arn. *Beech. Voy. Bot.* 301, t. 66 (*Lobelia*).—Benth. *Hook. Icon.* t. 1177.—*Fl. serr.* t. 1454.—Walp. *Rep.* ii. 708; vi. 375.

36. **Cyphocarpus** Miers.[1]—Flowers irregular resupinate; folioles of superior calyx 5, adnate at base entire unequally pinnatifid or dentate, persistent. Corolla 2-labiate; upper lip galeate entire, with appendiculate blade at apex; lower lip 4-lobed. Stamens 5, inserted at top of tube; filaments thin free; anthers oblong introrse, 2-rimose. Ovary inferior; style slender, girt at base with epigynous disk, dilated recurved at stigmatose apex, 2-lobed. Ovules ∞, ascending on 2 linear placentas, septum incomplete soon disappearing. Fruit capsular, crowned with calyx, laterally rimose; seeds ∞, ascending rugose albuminous.—An erect (annual?) herb, glabrescent or scabrellous; leaves alternate dentate-pinnatifid; flowers axillar solitary subsessile or (leaves being changed to bracts) in terminal spikes, bracteoles lateral stipate. (*Chili.*[2])

37. **Nemacladus** Nutt.[3]—Flowers irregular; sepals nearly equal. Petals 5, coalite in 2 lips, valvate, solute to base. Stamens 5; filaments free at base from corolla and each other, hence oftener remote, coalite higher in a tube pervious to style; anthers shorter introrse, 2-celled.[4] Ovary semi-inferior or higher adnate within the turbinate receptacle, crowned with 3 depressed epigynous glandules; cells 2; placenta septal, ∞-ovulate; style enclosed in staminal tube or stigmatose apex finally exserted, capitate, obtusely 2-lobed and externally papillose. Fruit membranous, loculicidally 2-valvate within calyx; seeds few ∞.—A small thin branched annual; basal leaves rosulate; upper cauline minute bract-like; flowers[5] in loose compound racemes, thinly pedicellate, without bracts. (*California.*[6])

38. **Parishella** A. Gray.[7]—"Calyx 5-fid; tube campanulate adnate, shorter than spathulate foliaceous lobes. Corolla subrotate, shorter than calyx, deeply nearly equally 5-fid. Stamens 5, free from corolla; filaments (separate only at base) connate in a slender tube inflexed at apex; anthers free bare oval; cells

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[1] *Hook. Lond. Journ.* vii. 62; *Ill. S.-Amer. pl.* i. t. 27.—B. H. *Gen.* ii. 554, n. 21.

[2] Spec. 1. *C. rigescens* Miers, *loc. cit.*—C. Gay, *Fl. chil.* iv. 335, t. 50.

[3] *Trans. Amer. Phil. Soc.* ser. 2, viii. 254.—B. H. *Gen.* ii. 554, n. 22.

[4] Inner cellule sometimes smaller.

[5] Very small, pale pink.

[6] Spec. 2. Torr. *Emor. Exp. Bot.* t. 35.—A. Gray, *Journ. Linn. Soc.* xiv. 28; *Bot. Calif.* i. 445; ii. 460.—Walp. *Ann.* ii. 1038.

[7] *Bot. Gaz.* vii. (1882), 94, said to be very near *Nemacladus*, to us quite unknown. Characters therefore assumed from author's description (*Proc. Amer. Acad.* xix. 82).

dehiscing introrsely. Ovary 2-celled, multiovulate; style filiform; stigma depressed capitate, 2-lobed exannulate. Capsule turbinate, inferior, polyspermous, dehiscing operculately at vertex between persistent lobes of calyx; operculum broad conical, with style at apex finally deciduous with marcescent corolla.—A small monocarpic glabellous herb;[1] leaves spathulate with axillar flowers short-pedunculate rosulate at neck, proliferous, branches depressed bare below; corolla white." (*California.*)

V. GOODENIEÆ.

39. **Goodenia** Sm.—Flowers hermaphrodite; receptacle tubular. Sepals 5, inserted at margin of receptacle, valvate. Corolla gamopetalous, inserted with or above the calyx, tube sometimes gibbous or spurred to base, thence divided to a less or greater extent; lobes of more or less superior limb unequal, unequally solute, often 2-alate or more rarely 2-auriculate, induplicately valvate, corrugate, generally approximating to 2 lips after anthesis. Stamens 5, inserted with corolla free; anthers introrse dorsifixed or subbasifixed free, 2-rimose. Ovary quite or partly inferior, cells 2, complete or oftener incomplete; style truncate at apex more or less dilated, perforated or 2-lobed, and furnished with a cupule inserted under and enclosing apex. Ovules in cells 2-∞, 2-seriately ascending anatropous. Fruit capsular or more rarely (*Selliera*) rather thick and fleshy, scarcely dehiscent or oftener by 2–4 parallel valves with more or less complete septum; albumen fleshy or subnil; radicle of straight embryo inferior.—Herbs, undershrubs or shrubs; leaves alternate; flowers axillar or in simple or branched racemes; bracteoles 1- many-flowered or 0. (*Australia.*)—See p. 337.

40? **Calogyne** R. Br.[2]—Flowers, &c., of *Goodenia*; style 2–3-branched; capsule finally 2-valvate.—Annuals; leaves alternate; flowers[3] axillar solitary; peduncle without bracts. (*Trop. and west. Australia.*[4])

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[1] Spec. 1, *P. californica.*

[2] *Prodr.* 578.—Endl. *Gen.* n. 3044.—B. H. *Gen.* ii. 539, n. 5.—*Distylis* Gaudich. *Freyc. Voy. Bot.* 460, t. 80.

[3] Yellow.

[4] Spec. 3. Benth. *Fl. Austral.* iv. 80.—F. Muell. *Fragm.* viii. 57.

41. **Velleia** Sm.[1]—Flowers nearly of *Goodenia*; receptacle nearly flat or rather concave cupular, above insertion of calyx quite hypogynously produced and a little higher bearing the corolla and andrœcium at its margin. Ovary quite or mostly free; cells 2 very incomplete, sometimes nearly 1-celled. Ovules few or ∞, ascending; placenta often subcentral. Style furnished below apex with a cupule oftener wide. Fruit capsular free, 2–4-valvate; seeds albuminous marginate or alate. Other characters of *Goodenia.*—Herbs; stem thick short; leaves rosulate at base or on thick stem alternate; flowers[2] in ascending racemes, bare at base, more or less 2–3-chotomously branched; bracts opposite. (*Warm Australia.*[3])

42? **Anthotium** R. Br.[4]—Flowers, &c., of *Goodenia*; ovary inferior. Anthers coalite in a tube around style. Ovules in cells (oftener perfect) ∞, ascending; cupular indusium of style not ciliate. Capsule 4-valvate; seeds ∞, externally crustaceous.—Perennial herbs, cæspitose at base; leaves basal entire; aerial stems simple or branched almost leafless; flowers[5] 5 in dense, sometimes corymbiform glomerules, or sometimes nearly solitary. (*South-west. Australia.*[6])

43. **Leschenaultia** R. Br.[7]—Flowers of *Anthotium* (or *Goodenia*); ovary inferior. Corolla irregular oblique, induplicately valvate. Anthers oftener coalite in a tube. Ovules in complete cells ∞, ascending. Indusium of style 2-labiate; one lip sometimes smaller glandular or subnil; the other developed villose. Fruit capsular inferior, 4-valvate; seeds 2–4-seriate, truncate or angular.—Herbs, undershrubs or shrubs; leaves alternate, often ericoid, linear entire; flowers[8] solitary or in terminal foliate corymbs. (*Australia.*[9])

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[1] *Trans. Linn. Soc.* iv. 217.—Endl. *Gen.* n. 3047.—B. H. *Gen.* ii. 538, n. 3.—*Euthales* R. Br. *Prodr.* 579.—Endl. *Gen.* n. 3046.

[2] Yellow, often pretty.

[3] Spec. about 12. J. *Ann. Mus.* xvii. t. 1.—Hook. f. *Exot. Fl.* t. 24.—Labill. *N.-Holl.* i. t. 77.—Guillem. *Ic. pl. austral.* t. 4.—De Vr. *Gooden.* t. 33 (*Euthales*), 34.—Hook. f. *Fl. tasm.* i. t. 68 .—F. Muell. *Hook. Kew Journ.* viii. 162.—Benth. *Fl. Austral.* iv. 46.—*Bot. Reg.* t. 551, 971; (1841), t. 3 (*Euthales*).—*Bot. Mag.* t. 1137 (*Goodenia*).

[4] *Prodr.* 582.—Endl. *Gen.* n. 3049.—B. H. *Gen.* ii. 537, n. 2.

[5] Yellow or "red."

[6] Spec. 2. Spreng. *Syst.* i. 720 (*Leschenaultia*).—De Vr. *Gooden.* t. 37; *Pl. Preiss.* i. 413; ii. 244 (*Goodenia*).—Benth. *Fl. Austral.* iv. 44.

[7] *Prodr.* 581.—Endl. *Gen.* n. 3048.—B. H. *Gen.* ii. 537, n. 1.—*Latouria* de Vr. *Gooden.* 187.

[8] Yellow, red or violet.

[9] Spec. 15, 16. Sweet, *Fl. Austral.* t. 26, 46.—De Vr. *loc. cit.* 181, t. 35, 36.—Benth. *Fl. Austral.* iv. 39.—Lodd. *Bot. Cab.* t. 1579.—*Fl. serr.* t. 176, 219.—*Bot. Reg.* t. 916; 1842), t. 2.—*Bot. Mag.* t. 2600, 4256, 4265.

44? **Catosperma** Benth.[1]—Flowers nearly of *Goodenia*; ovary inferior. Anthers free. Ovules in cells 2, ascending: indusium of style cupular. Fruit drupaceous, 10-costate; cells 2, imperfectly 2-locellate; seeds 4, descending.—A glabrous herb; leaves alternate dentate; flowers[2] in axillar pedunculate cymes. (*Trop. Australia.*[3])

45. **Scævola** L.[4]—Flowers nearly of *Goodenia*; ovary inferior. Corolla tube longitudinally divided to base; divisions sometimes marginally contiguous (*Diaspasis*[5]); lobes of limb unequal or subequal induplicately valvate not auriculate. Anthers free. Ovule solitary in more or less complete or sometimes very incomplete cell, ascending or suberect anatropous. Style furnished below apex with entire cupular indusium, ciliate or 2-lobed. Fruit drupaceous; exocarp thin or succulent. Seeds in 1–2-celled putamen 1, 2; embryo subequal in length to subterete albumen.—Herbs, undershrubs or shrubs[6]; leaves alternate or sometimes opposite, entire or dentate; flowers[7] axillar solitary or 2-chotomously cymose. (*Australia, Pacific Isles, trop. Marit. Asia and Africa.*[8])

46. **Dampiera** R. Br.[9]—Flowers nearly of *Goodenia*; corolla lobes unequally alate or auriculate, or the upper connivent exauriculate (*Verreauxia.*[10]). Seed inferior, 2-celled; the second cell abortive, rudimentary or more rarely ovuliferous. Ovules in cells solitary, inserted near the base ascending or suberect anatropous; micropyle inferior. Fruit indehiscent; seed various rather compressed or flat subalate albuminous.—Herbs, undershrubs or

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[1] *Hook. Icon.* t. 1028; *Gen.* ii. 539, n. 7; *Fl. Austral.* iv. 83.

[2] Yellow.

[3] Spec. 1. *C. goodeniaceum.* — *C. Mueller* Benth.—*Scævola goodeniacea* F. Muell. *Fragm.* i. 121.

[4] *Mantiss.* n. 1294.—J. *Gen.* 165.—A. DC. *Prodr.* vii. 505.—Endl. *Gen.* n. 3038.—B. H. *Gen.* ii. 540, n. 8.—*Rœmeria* Dennst. *Sch. H. malab.* 24.—*Cerbera* Lour. *Fl. cochinch.* 136.—*Lobelia* Gærtn. *Fruct.* t. 25.—*Pogonetes* Lindl. *Introd.* ed. 2, 443.—*Temminckia* de Vr. *Gooden.* 7.—*Camphusia* de Vr. *loc. cit.* 14.—*Molkenbœria* de Vr. *loc. cit.* 38, t. 7.—*Merkusia* de Vr. *loc. cit.* 45, t. 11.

[5] R. Br. *Prodr.* 586.—Endl. *Gen.* n. 3039.—B. H. *Gen.* ii. 540, n. 9 (tube not closed).

[6] Pubescence simple or stellate.

[7] White, azure, yellowish or red.

[8] Spec. about 60. Lamk, *Ill.* t. 124.—Cav. *Icon.* vi. t. 5091, 510.—Gaudich. *Freyc. Voy. Bot.* t. 81; *Bonite*, t. 48.—Wight, *Ill.* t. 137; *Icon.* t. 1613.—A. Gray, *Syn. Fl. N.-Amer.* ii. 1; *Proc. Amer. Acad.* v. 151.—Chapm. *Fl. S. Unit. St.* 255.—Griseb. *Fl. brit. W.-Ind.* 388.—Hook. f. *Handb. N.-Zeal. Fl.* 173; *Fl. tasm.* t. 67.—Benth. *Fl. Austral.* iv. 83.—F. Muell. *Fragm.* i. 121; ii. 18, 19.—Harv. and Sond. *Fl. cap.* 604.—Bak. *Fl. maurit.* 182.—Hiern, *Oliv. Fl. trop. Afr.* iii. 462.—*Bot. Mag.* t. 287 (*Goodenia*), 2732, 4196.—Andr. *Bot. Repos.* t. 22 (*Goodenia*).—Walp. *Rep.* ii. 712; vi. 890; *Ann.* ii. 1054.

[9] *Prodr.* 587.—Endl. *Gen.* n. 3040.—B. H. *Gen.* ii. 540, n. 11.—*Linschotenia* de Vr. *Gooden.* 119, t. 22.

[10] Benth. *Fl. Austral.* iv. 105; *Gen.* ii. 540, n. 10.

shrubs; indumentum various, often stellate, sometimes densely lanate; leaves alternate, entire, sinuate or dentate; flowers [1] solitary or variously cymose or spicate. (*Australia.*[2])

VI. BRUNONIEÆ.

47. **Brunonia** Sm.—Flowers hermaphrodite; receptacle sac-like enclosing free ovary. Sepals 5, inserted in mouth of receptacle, nearly equal patent, ciliate. Corolla tube inserted with calyx cylindrical; lobes of limb a little unequal (2 higher solute), valvate. Stamens 5 inserted a little above base of corolla tube; filaments free; anthers introrse coalite in a tube around style, 2-rimose. Ovary free, 1-celled; style provided with cupular indusium below 2-lobed stigmatose apex. Ovule 1, suberect anatropous; micropyle inferior. Fruit dry indehiscent, enclosed in receptacle with enlarged calyx. Seed exalbuminous; radicle of straight fleshy embryo inferior.—A perennial herb; indumentum various; leaves basal rosulate; flowers spuriously capitate glomerulate; capitules long-pedunculate, bracteate. (*Australia.*)—See p. 342.

VII. PHYLLACHNEÆ.

48. **Phyllachne** Forst.—Flowers hermaphrodite or polygamous subregular; receptacle concave, ovoid or obconical, enclosing adnate ovary. Calyx inserted at margin of receptacle, 5–9-phyllous. Corolla campanulate inserted with calyx; lobes 5–9, subequal, imbricate. Stamens 2; anthers laterally inserted below apex of style, extrorse; longitudinally 2-rimose; fissures confluent above. Ovary inferior, 2-celled; septum more or less incomplete and sometimes reduced to a central column. Disk consisting of 2 epigynous glandules alternating with stamens. Ovules in cells ∞, inserted on septum, ascending, anatropous. Style divided into 2 lobes alternating with stamens. Fruit dry, either indehiscent (*Euphyllachne*), or (*Forstera*) dehiscing at or below apex, some-

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[1] White, purple or azure.

[2] Spec. about 35. Hook. *Icon.* t. 1026, 1027.—De Vr. *Gooden.* t. 14–18, 20, 21; *Pl. Preiss.* t. 409 (*Scævola*).—Benth. *Fl. Austral.* iv. 105 (*Verreauxia*), 106.

times 2-valvate; seeds ∞; albumen fleshy.—Perennial oftener small herbs, decumbent or pulvinate; leaves small, rosulate at base or imbricate along stem; flowers either sessile between leaves (*Euphyllachne*), or at end of elongate subterminal peduncle solitary or few. (*Magellania, N. Zealand, Tasmania.*)—See p. 344.

49. **Stylidium** Sw.[1]—Flowers irregular; receptacle tubular or more or less elongate concave. Calyx inserted at top of receptacle, lobes 5, more or less unequal; imbricate in prefloration.[2] Corolla very irregular and inserted with calyx, lobes 5, unequal; the anterior (lip) oftener smaller, recurved, sometimes auriculate at base; imbricate in prefloration. Coronula various,[3] inserted at base of limb. Stamens 2, lateral, deeply connate with style; anthers inserted below stigmatose apex, extrorse, 2-rimose. Ovary inferior, 2-celled below; dissepiment more or less incomplete above; second cell sometimes abortive effete. Style bearing anthers above, often articulated above base and elastic recurved or replicate; lobes 2 stigmatose oftener inconspicuous. Ovules , inserted on septal placenta, ascending; micropyle extrorsely inferior. Anterior epigynous disk various in form. Fruit cupular, 1–2-celled, dehiscing from apex in 2 valves parallel to septum, or sometimes indehiscent. Seeds ∞, small; albumen fleshy.—Herbs, sometimes subshrubby at base; leaves rosulate at base or alternate, sometimes fasciculate along stem or branches and spuriously verticillate; flowers[4] oftener terminal and in simple or cymiferous, spike-like or corymbiform racemes, sometimes (*Forsteropsis*[5]) sessile between small scale-like and imbricate leaves. (*Australia,*[6] *E. Indies, all trop. reg. of old world.*[7])

50. **Levenhookia** R. Br.[8]—Flowers hermaphrodite or poly-

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[1] *Ges. Nat. Fr. Berl. Mag.* i. 47, t. 1, 2 (not Lour.).—Endl. *Gen.* n. 1093.—H. Bn, *Payer Fam. nat.* 246; *Adansonia*, xii. 354, t. 2.—B. H. *Gen.* ii. 534.—*Ventenatia* Sm. *Exot. Bot.* ii. 13, t. 66, 67 (not P.-Beauv.).—*Candollea* Labill. *Ann. Mus.* vi. 453, t. 63, 64.—F. v. Muell. *N. Giorn. bot. ital.* v. 171 (preferable ?); xi. 203.

[2] Quincuncial.

[3] Often of 8 scales geminate before the 4 posterior lobes of the corolla.

[4] Pink or white, sometimes showy.

[5] Sond. *Pl. Preiss.* i. 393.

[6] Bauer, *Ill.* t. 15.—Benth. *Fl. Austral.* iv. 2.—F. Muell. *Fragm.* vi. t. 69.—Labill. *N. Holl.* t. 213-217.—Hook. *Exot. Fl.* t. 32.—Sal. *Par. lond.* t. 77.—*Fl. serr.* (1855), 81.—*Tuinb. Fl.* (1858), iii. 29.—Hook. f. *Handb. N.-Zeal. Fl.* 168.—*Bot. Reg.* t. 90, 550, 914, 1459; (1842), t. 15, 41.—*Bot. Mag.* t. 1918, 2249, 2598, 3136, 3194, 3816, 3883, 3913, 4529, 4538, 5953.—Walp. *Rep.* vi. 367.

[7] Griff. *Notul.* iv. 275.—Kurz, *Flora* (1872), 303; *Journ. As. Soc.* (1876), ii. 137; (1877), ii. 212.—Clke, *Hook. Fl. brit. Ind.* iii. 420.

[8] *Prodr.* 572.—Bauer, *Ill.* t. 15.—Endl. *Gen.* n. 3094.—B. H. *Gen.* ii. 535, n. 2.—H.

gamous irregular; receptacle sac-like. Calyx 5-partite, imbricate. Corolla irregular 5-lobed; blades of labellum cucullate, oftener elastically reflexed, covering anthers; imbricate before floration. Stamens 2, connate with style in a short (not elastic) column; cells of extrorse anther finally subsuperposed. Lobes 2 stigmatose, elongate (or in male flower not or scarcely distinct). Ovary inferior, sub-1-celled; placenta central, ∞-ovulate; ovules ascending; micropyle extrorsely inferior;[1] septum very incomplete or sometimes almost nil. Fruit capsular, crowned with calyx, 2-valvate at apex.—Annuals, sometimes very small, simple or branched; leaves alternate; flowers[2] in short terminal unequal racemes, bracteate. (*Australia.*[3])

BN, *Adansonia*, xii. 354, t. 1.—*Leeuwenhœkia* DC. *Prodr.* vii. 338.—*Coleostyles* SOND. *Pl. Preiss.* i. 391.

[1] Integument duplex.

[2] White, small or minute.

[3] Spec. about 7. BENTH. *Fl. Austral.* iv. 34.

LXVIII. CUCURBITACEÆ.

I. FEVILLEA SERIES.

Fevillea trilobata.

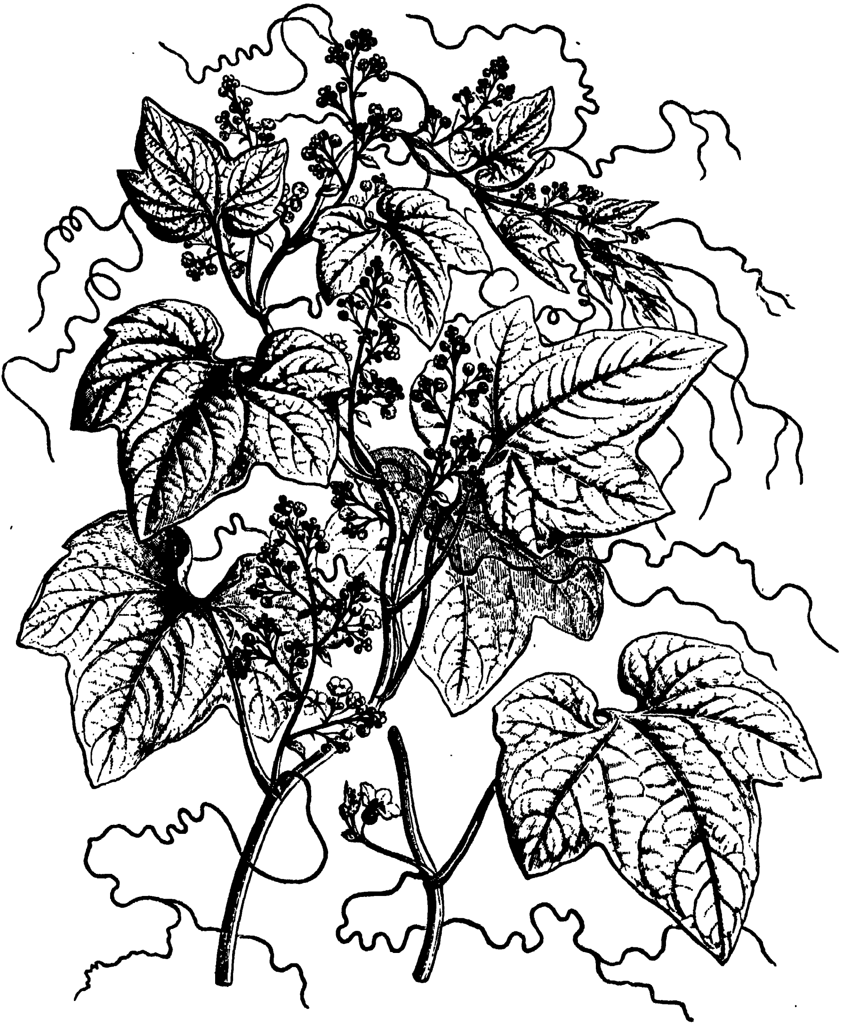

Fig. 207. Branch with male flowers. **Fig. 208. Branch with female flowers.**

The Cucurbitaceæ growing wild among us and the herbaceous species cultivated in our gardens do not represent the regular types of this family. These types are found in *Fevillea*[1] (fig. 207–217) formerly placed in another family, Nhandirobeæ or Fevilleæ. The flowers are diœcious and regular. The males have a receptacle in the form of a shallow cup the margin of which bears a double perianth, viz. a calyx of five sepals, at first quincuncially imbricated, and five alternate petals, equally imbricated in the bud, generally furnished below and within, on the middle line, with a more or less prominent crest.[2] The andrœcium is formed of five stamens, inserted a little within the petals, with which they exactly alternate. Each has a free recurved filament, and a basifixed anther the connective of which is dilated in a more or less expanded, thick or spathulate blade, continuous with the extremity of the filament and bearing on its outer face a single cell, dehiscing outwards by a longitudinal middle cleft.[3]

Fevillea trilobata.

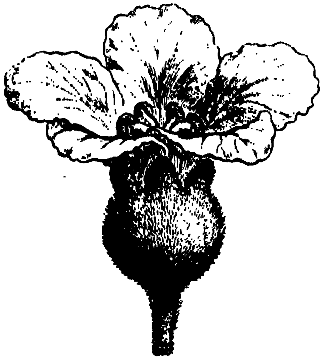

Fig. 209. Female flower.

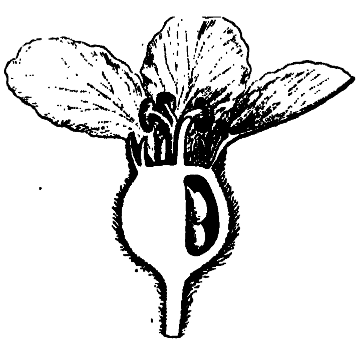

Fig. 210. Long. sect. of female flower.

The female flowers (fig. 209-210) have a deeper sac- or gourd-like receptacle, the neck of which is short or elongate and is dilated above to a sort of cup similar to the receptacle of the male flowers.

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[1] L. *Gen.* (1737), 362 ; ed. 6, n. 1118 (*Fevillea*).—J. *Gen.* 397.—Poir. *Dict.* iv. 417.—Spach, *Suit. à Buffon*, vi. 188.—Endl. *Gen.* n. 5121.—B. H. *Gen.* i. 840, n. 68.—H. Bn, *Compt. rend. Ass. fr.* (1878), 684, t. 14, fig. 5–8 ; *Bull. Soc. Linn. Par.* 210.—Cogn. *Cucurb. DC. Monogr. Phanér.* iii. 938.—*Nhandiroba* Plum. *Amer.* 20, t. 27.—Turp. *Dict. sc. nat.* Atl. t. 210, 211.—*Hypanthera* S. Manso, *Enum. subst. brazil.* 37.—Endl. *Gen.* Suppl. iii. 90.

[2] It has often been described as a sterile and oppositipetalous stamen.

[3] The lips of this fissure may recoil after dehiscence. We have pointed out that it is erroneous to consider these anthers as 2-celled, and shown the cause of the error. The valves of the cell are reflexed. The pollen grains are ovoid, smooth with 3 longitudinal furrows; moistened, they become nearly spherical, and the furrows disappear.

On its margin are inserted the pentamerous calyx and corolla, and lower the alternipetalous staminodes. In the cavity of the receptacle is lodged an inferior adnate ovary with three complete or incomplete cells, in the inner angle of which is an axile placenta bearing a variable number of ovules; sometimes only four in two vertical series, descending, anatropous, with micropyle directed upwards and outwards. Oftener the number of ovules is indefinite. The style surmounting the ovary is divided more or less deeply, often to the base, into three branches the stigmatiferous extremity of which is dilated and bilobed. The fruit is a berry, sometimes large, finally dry, and more or less hard. It is sur-

Fevillea trilobata.

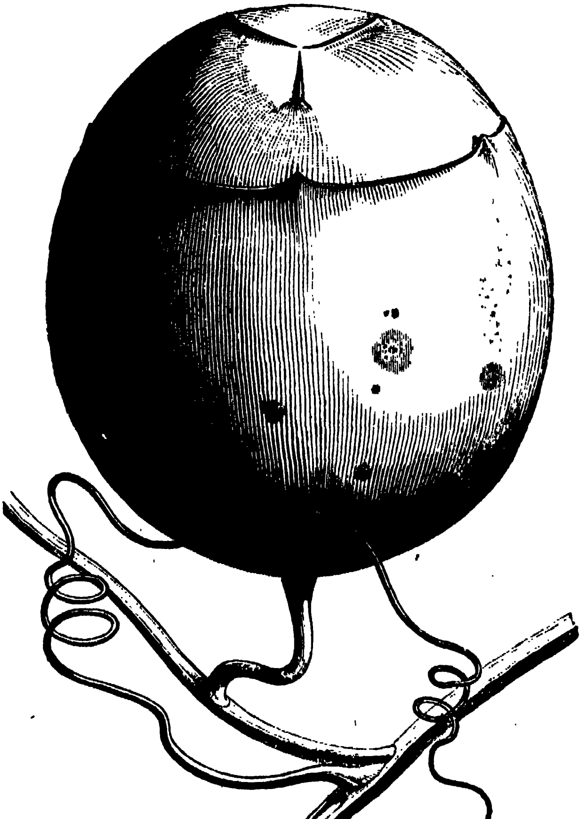

Fig. 211. Fruit.

rounded at a variable height by an annular scar corresponding to the margin of the receptacle and often bearing traces of the five sepals. In the cells, more or less incomplete, of this fruit are seeds, variable in number, attached to a placenta with three angles or wings, and generally large, orbicular, compressed, enclosing under their thick integuments a large fleshy embryo with thick rounded cotyledons and a short superior radicle.

Fevillea cordifolia.

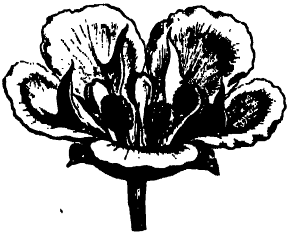

Fig. 212. Male flower.

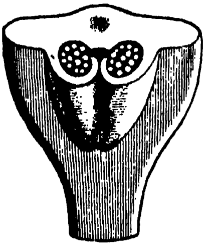

Fig. 213. Trans. sect. of anther, front view.

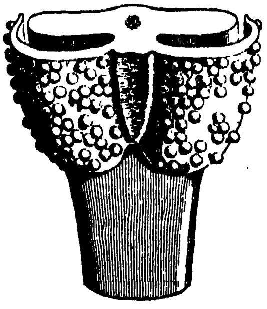

Fig. 214. Trans. sect. of anther after dehiscence.

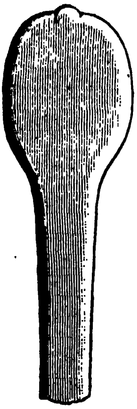

Fig. 215. Back view of stamen.

In most Fevilleas, the ovary is not completely enclosed in the cavity of the receptacle, above the margin of which its summit projects more or less. In *F. trilobata* (fig. 207–211) the top of the ovary is cut horizontally and does not extend beyond the receptacular opening. The same is true of *F. parviflora,* of which a separate genus has been made under the name of *Anisosperma,*[1] and in the trifoliolate leaves of which the lateral folioles are reduced to two petiolate glands, while its male inflorescences are less branched than those of most Fevilleas proper.

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[1] S. Mans. *Enum.* 38.—Corr. de Mello, *Journ. Linn. Soc.* xi. 258 (1869).—Cogn. *Mart. Fl. bras.* lxxvii. 120; *Cucurbitac. DC. Monogr. Phanér.* iii. 944, n. 79.

Thus constituted, this genus comprises six or seven species,[1] all from tropical America, with shrubby climbing stems, with oval, cordate, angular or digitilobed leaves. They are sustained by tendrils bifurcate at the end, situate at the side of the axil of the leaves. The inflorescence, likewise laterally axillar, is in more or less branched and compound clusters. The female flowers[2] are either solitary, or much fewer than the males, on separate branches.

Fevillea cordifolia.

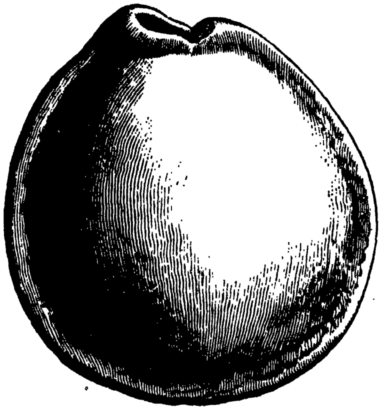

Fig. 216. Seed.

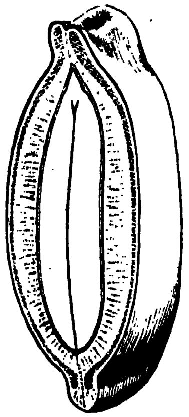

Fig. 217. Long. sect. of seed.

The following genera, having nearly the flower of *Fevillea*, and differing chiefly in the characters of fruit and seed, have, in our opinion erroneously, been placed in distinct tribes. Thus *Alsomitra*, of which American species have been described, but which comprises chiefly tropical Asiatic and Oceanic plants, has the male flowers and five stamens of *Fevillea*; but the fruit is cylindrical or clavate, dry and dehiscing above the perianth by three triangular valves. When these are separated, a large opening is left at the top of the fruit affording egress for the seeds furnished below with a long transparent membranous wing. They are climbing plants with mostly trifoliolate leaves. *Zanonia* (fig. 218–222) has the same fruit, generally larger, and seeds provided with one circular membranous, or oftener two rigid elongate wings. The leaves are simple; the stamens, five, alternipetalous, have each a basifixed and one-celled anther, opening above by a transverse cleft. Each of the three ovarian cells contains two or more descending ovules. They are climbing plants, with simple leaves, from tropical Asia and Oceania. *Gerrardanthus macrorhiza*, a climbing plant of Natal

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[1] VELL. *Fl. flum.* x. t. 102, 104.—DC. *Prodr.* ii. 297.—RŒM. *Syn.* 114.—GRISEB. *Fl. brit. W.-Ind.* 289.—COGN. *Mart. Fl. bras.* lxxviii. 115, t. 37; t. 38 (*Anisosperma*).—WALP. *Rep.* ii. 933.

[2] Yellow, small.

Zanonia indica.

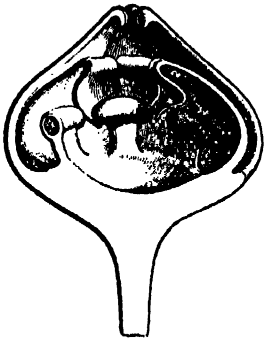

Fig. 218. Long. sect. of male bud.

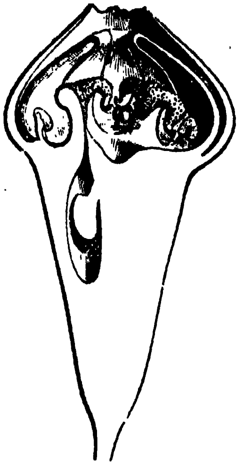

Fig. 219. Long. sect. of female bud.

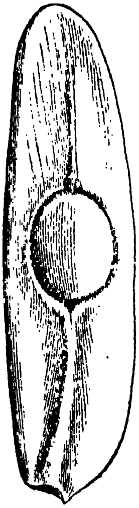

Fig. 221. Seed.

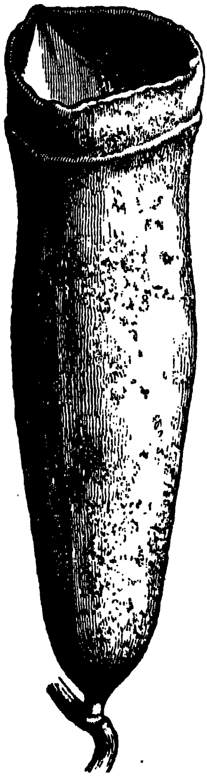

Fig. 220. Dehiscing fruit.

Fig. 222. Long. sect. of seed.

with an enormous root, has the fruit of *Zanonia*, with seeds winged above; but the male flowers have unequal petals, four fertile and one sterile stamens, variously connected; the leaves are simple, hastate or cordate. In *Gomphogyne*, Indian climbing herbs, the fruit also opens at the summit, but is smaller and horn-shaped with longitudinal ridges. The seeds are compressed, not winged, rugose and often denticulate at the margin. The three incomplete ovarian cells contain each but a single ovule. The male flower has five stamens, free except at the base of the filament, each bearing a one-celled anther with a line of dehiscence extrorse and longitudinal. *Actinostemma* (fig. 223–225), climbing herbs of Eastern Asia, with entire lobed or cordate leaves, have male flowers with five free stamens, the anthers of which, like those of *Gomphogyne*, open outwardly by a longitudinal cleft. But the dry fruit, often rugose or prickly, is a pyxid discharging one or more compressed seeds without wings. The one-celled ovary encloses two or four

Actinostemma tenerum.

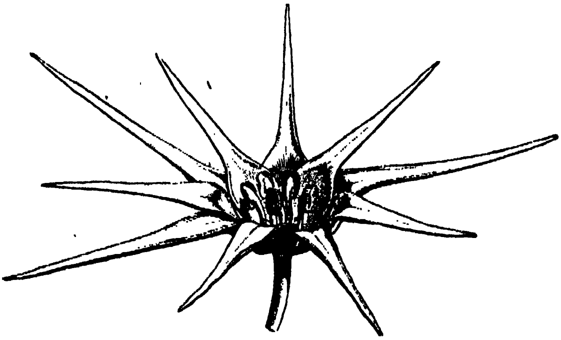

Fig. 223. Male flower.

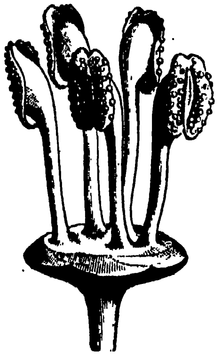

Fig. 224. Male flower, perianth removed.

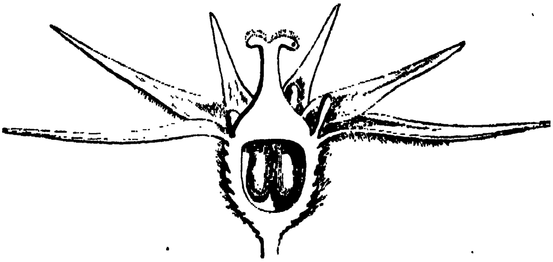

Fig. 225. Long. sect. of female flower.

descending ovules inserted on a parietal placenta. *Gynostemma* also consists of Asiatic and Oceanic climbing herbs; the leaves are compound pedate, with a variable number of folioles. The extrorse and one-celled anthers are borne on a common central column; the ovarian cells are two or three, with the same number of style-branches, and two descending ovules in each cell. But the fruit is indehiscent; and the seeds, one, two, or three in number, are without wings and rugose or muricate on the surface. By the characters of its pericarp, this genus forms a transition from the preceding to the following exceptional genus with smooth fruit. *Schizopepon bryoniæfolius* (fig. 226, 227) has flowers more perfect than the preceding types in that they are hermaphrodite instead of unisexual; but, on the other hand, the symmetry of the andrœcium is deranged by a displacement of the stamens, thus:—At first, the stamens, like those of *Fevillea*, alternate exactly with the petals. But, from unequal growth and approximation, while one remains in the interval between two petals, the other four approach in pairs to perfect contact, and the filaments, united two and two in a single thread, bear each a pair of one-celled anthers resembling a single two-celled anther opposite to a petal. The anther, moreover, is ellipsoid and dehisces by an exterior middle vertical cleft. The receptacle has a gourd-like form with a short neck, dilated above to a cup bearing a pentamerous

Schizopepon bryoniæfolius.

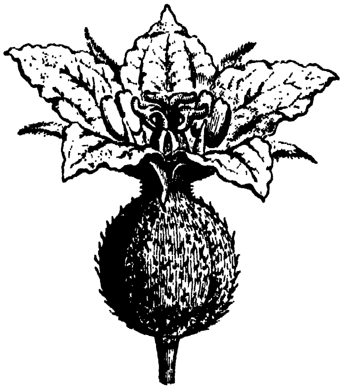

Fig. 226. Flower (4/1).

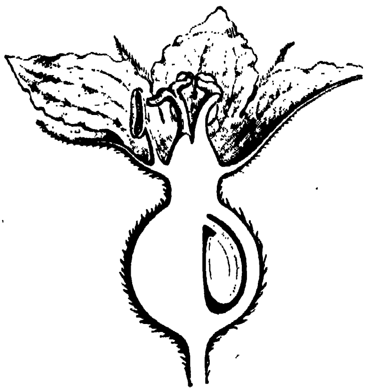

Fig. 227. Long. sect. of flower.

calyx and corolla. The very young sepals are slightly imbricated, and the petals in prefloration are valvate or wanting. The ovary, inferior, has three cells each containing a single anatropous ovule, descending from the upper part of the internal angle with micropyle directed upwards and inwards. The style is divided into three short stigmatiferous lobes, themselves nearly entire or unequally divided. The fruit is a small berry at first resembling that of our Bryony, and enclosing one, two or three exalbuminous seeds, but finally dries and opens elastically from top to bottom in three valves casting the seeds to a distance. The only *Schizopepon* known is a climbing herb, with alternate, oval-cordate and many-lobed leaves, found as yet in Japan and Mandchouria.

II. CHAYOTE SERIES.

The Chayotes[1] (fig. 228–233) have regular, unisexual, monœcious flowers. In the males the receptacle is in the form of a hemispherical cup, with an internal disk more or less developed having ten lobes or crenels more or less pronounced. At the margin are inserted a calyx of five straight elongate sepals, the upper extremities of which overlap in imbricate prefloration, and five alternate petals, valvate in the bud. Much lower and near the centre, the receptacular cavity bears five alternipetalous and free stamens. Each has a narrow filament and a one-celled extrorse anther, the cell of which is flexuose and opens outwardly by an equally flexuose cleft following the wrinkles of the cell.[2] These stamens often unite by the margins of their anthers, and four of them in particular thus slightly adhere in pairs; but they can always be separated without tearing, and thus demonstrate their alternipetalous position. In the female flower the perianth is similar to that of the male, and is also inserted on the margin of a cupular receptacle; but the latter is prolonged below in a narrow neck, dilated lower down to a lageniform cavity in which is lodged an inferior adnate ovary. This has primarily three little-prominent parietal placentas; but only one of these develops and bears in the upper part a single descending and anatropous ovule, with a micropyle finally directed upwards and inwards. The ovary is

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[1] *Sechium* P. Br. *Jam.* 355.—Poir. *Dict.* vii. 50; *Dict. sc. nat.* xlvii. 293.—Ser. *DC. Prodr.* iii. 313.—Endl. *Gen.* n. 5147.—B. H. *Gen.* i. 837, n. 57.—Cogn. *Cucurb.* 900.—*Chocho* Adans. *Fam. des pl.* ii. 500.—*Chayota* Jacq. *Amer.* ed. pict. ii. t. 245.

[2] The pollen is in globular 10-cornered grains, dehiscing by 10 pores.

Sechium edule.

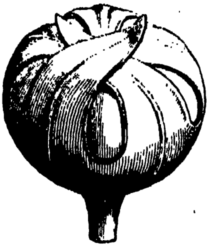

Fig: 228. Male bud ($\frac{5}{1}$).

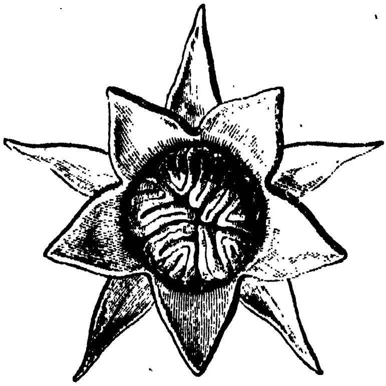

Fig. 229. Male flower.

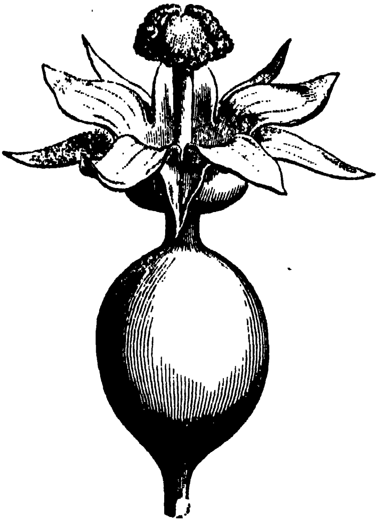

Fig. 230. Female flower.

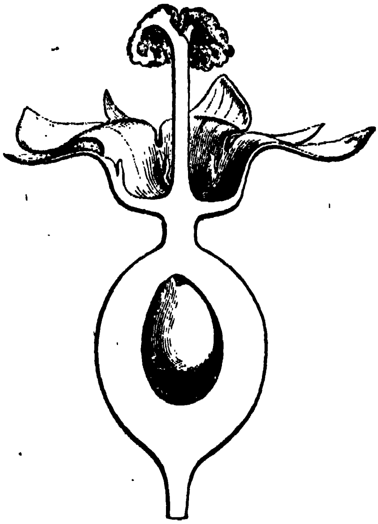

Fig. 231. Long. sect. of female flower.

surmounted by a slender style the upper extremity of which is enlarged in three lobes, these again more or less deeply bilobed and stigmatiferous. The fruit (fig. 232, 233) is a large berry more or less deeply furrowed, mammæform or rugose, and containing a large, descending, compressed seed, the integuments of which cover a thick fleshy exalbuminous embryo.

S. edule,[1] the only species known of this genus, is a perennial herb, shrubby at base, hispidulous, and climbing by the aid of subaxillar tendrils with from 2–5 branches, more generally 3-fid. The alternate leaves are digitinerved, angular or lobed, cordate at the base. The male flowers[2] are in clusters the peduncle of which is bare at the base, and the females are inserted in the axil of the same leaves and solitary or geminate. A native of tropical America, this plant has been introduced by culture in most parts of both worlds.

Sechium edule.

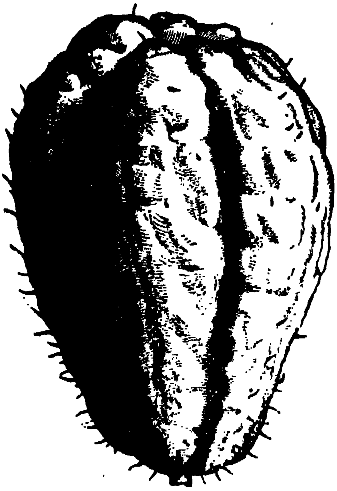

Fig. 232. Fruit (⅔).

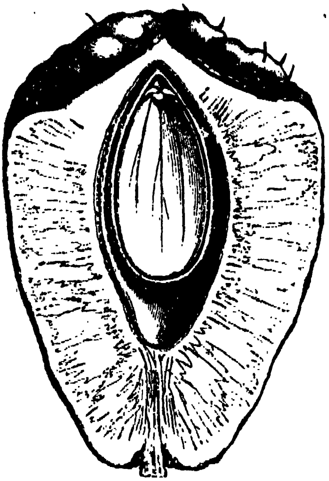

Fig. 233. Long. sect. of fruit.

In *Sicyos* (fig. 234), American and Oceanic annuals, the monœcious flowers are similar to those of *Sechium*, with the same ovary and ovule; but the fruit, coriaceous or almost wood, is rounded or fusiform, compressed or angular, 3–6-quetrous; and the andrœcium represents a slender column surmounted by anthers contiguous at their head and four of which are united in pairs, with linear and more or less sigmoid or sinuous cells. A *Sicyos* of Texas, *S. gracilis*, which has been named *Sicyosperma*, the male flower of which is very small, has petals often terminated in two points and the anther cells simply curved.

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[1] Sw. *Fl. ind. occ.* ii. 1150.—*S. americanum* Poir.—Cogn. *Mart. Fl. bras.* lxxviii. 111, t. 35.—*Sicyos edulis* Jacq. *Select. stirp. amer.* t. 163.—*S. laciniatus* Descourt. *Fl. Ant.* v. 103.—*Chayota edulis* Jacq. *Amer.* ed. pict. *loc. cit.*—*Cucumis acutangulus* Descourt. *Fl. Ant.* v. 94, t. 328.

[2] Small; dirty white or greenish.

Sicyos angulatus.

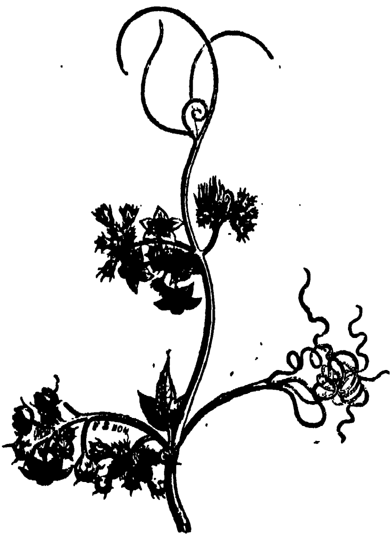

Fig. 234. Floriferous branch.

The three American genera *Microsechium*, *Sechiopsis* and *Sicydium* are also closely allied to *Sechium*. The first has 3- or 4-partite maleflowers and trimerous female, four stamens of *Sicyos* and a fleshy fruit. The second has trimerous female and pentamerous male flowers, with the andrœcium of *Sicyos* and a pateriform receptacle with two glandular enlargements below opposite each petal; the fruit is dry with three wings. *Sicydium* has pentamerous flowers of both sexes, and narrow petals more or less elongate or triangular. The fruit is fleshy or fibrous, globular or winged, and the five stamens are triadelphous; but the anthers are short and the cells not distorted. Those which are united in pairs resemble a sort of didymous anther.

III. PERIANTHOPODUS SERIES.

Perianthopodus[1] (fig. 235) has unisexual and monœcious or diœcious flowers. The male receptacle is in the form of a broad and short tube, or oftener bell- or cup-shaped. Its margin bears a calyx of five dentiform sepals, free or united to a small extent, and a corolla of five valvate or slightly induplicate petals, frequently appearing at the time of anthesis as the parts of a rotate corolla. The stamens, inserted near the bottom of the receptacle, are formed of a free filament and a one-celled extrorse anther, with a cell folded once or oftener twice upon itself and dehiscing by a cleft following these sinuosities.[1] As in most of our cultivated Cucurbitaceæ, by contractions in the horizontal plan, one of these anthers remains isolated and alternipetalous, while the other four approach in pairs so as to resemble two bilocular and alternisepalous anthers.[2] In the centre of the flower is nearly always found the rudiment of a gynœcium often assuming the form of a disk.[3] In the female flower, the receptacular cup is supported by a contracted neck, soon dilated below in an ovoid or oblong sac in the hollow of which is lodged an adnate and inferior ovary with one, two or oftener three cells in each of which are from one to four ovules, generally ascending and anatropous.[4] An erect columnar style surmounts the ovary; it is surrounded at its base by an epigynous annular disk, entire or three-lobed, more or less thick, and is divided above into three narrow or dilated branches, sometimes subpetaloid and finally reflexed, charged with stigmatic papillæ. The fruit, globular or ovoid, fleshy or more or less coriaceous, is an indehiscent berry containing from one to ten or twelve seeds. The latter are provided with albumen, ascending or nearly erect, often elongate, rounded or compressed to a very

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[1] S. MANSO, *Enum.* (1836), 28.—ENDL. *Gen.* Suppl. iii. 94.—*Cayaponia* S. MANSO, *loc. cit.* 31.—ENDL. *Gen.* Suppl. ii. 91.—COGN. *Cucurb.* 738.—*Cionandra* GRISEB. *Fl. brit. W.-Ind.* 286. —*Trianosperma* MART. *Syst. Mat. med. Bras.* 79. —NAUD. *Ann. sc. nat.* sér. 4, xvi. 189; xviii. 205; sér. 5, vi. 14.—B. H. *Gen.* i. 835.—? *Druparia* S. MANSO, *loc. cit.* 35.—ENDL. *Gen.* Suppl. iii. 91.—*Antagonia* GRISEB. *Pl. Lorentz.* 144.

Perianthopodus Tayuya.

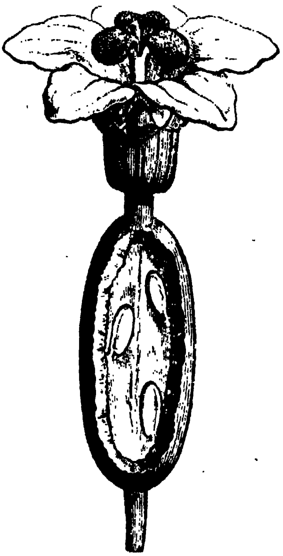

Fig. 235. Female flower with open ovary (♀).

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[1] The stamens are reduced to staminodes in the female flower.

[2] The pollen grains are globular, finely muricated and dehiscing by 4 pores.

[3] Very variable in height and form, sometimes almost nil.

[4] With the micropyle inferior and interior. We should say, however, that in this genus, descending ovules with ventral raphe are occasionally met with; which deprives the character of ovular direction of much of its value when absolute.

variable degree, and they enclose a fleshy embryo with inferior radicle.

Arkezostis[1] consists of Perianthopods with an ovary of three uniovulate cells; and *Abobra*,[2] of Perianthopods the seed of which is a little more compressed than in the type-species, and the stylary branches are narrower. But we include them in the same genus which, thus constituted,[3] contains about sixty species,[4] all American except one found in western tropical Africa. They are creeping, sometimes climbing herbs, often with a perennial rhizome, with leaves entire or rarely 3–5-foliolate, oftener 2–5-lobed and palmate. The tendrils are lateral, mostly 2–5-fid. The flowers[5] are monœcious or rarely diœcious, solitary or united in simple branched or compound clusters of cymes.

Beside this genus are placed *Selysia* and *Dicœlospermum*. The former has anthers with a broad connective and curved cells, folded inwards above, and the fruit encloses triangular seeds, much compressed, smooth, not marginate, acuminate at the base. They are nearly glabrous herbs of Peru and Columbia. *Sicœlospermum* is Indian, herbaceous, scabrous and climbing. The anthers have straight cells and the gynœcium is rudimentary in the male flower. The seeds are much compressed, but thickened at the margin. The female flower is not yet known.

IV. CYCLANTHERA SERIES.

Cyclanthera[6] (fig. 236–241) derives its name from the form of its andrœcium. The latter consists of a foot supporting a sort of circular table formed by the confluence of all the connectives and bordered by a continuous annular cell, dehiscing all round by a circular cleft.[1] This andrœcium is surrounded by a receptacular cup bearing at its margin five dentiform sepals and five alternate valvate petals. In the female flower the lower part of the receptacle takes the form of a gourd obliquely obovoid, with a contracted and curved neck. The perianth is similar to that of the male flower, and the style is dilated above in a discoid and depressed head, in the centre of which is a small fosset bordered with teeth.

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[1] Rafin. *N. Fl.* (1836), iv. 100.—*Trianosperma* Mart. *Syst. Mat. med. Bras.* 79.—Naud. *Ann. sc. nat.* sér. 4, xvi. 189; xviii. 205; sér. 5, vi. 14.—B. H. *Gen.* i. 835.—Cogn. *Cucurb.* 739, 741, 765.—*Boikinia* Nutt. ex Arn. *Hook. Journ. Bot.* iii. 276.—*Cionandra* Griseb. *Fl. brit. W.-Ind.* 286.

[2] Naud. *Rev. hort.* (1862), 111; *Ann. sc. nat.* sér. 4, xvi. 196.—B. H. *Gen.* i. 834.—Cogn. *Cucurb.* 737.

[3] Sect. 4 :
- 1. *Euperianthopodus.*
- 2. *Arkezostis.*
- 3. *Cayaponia.*
- 4. *Abobra.*

[4] Pœpp. et Endl. *Nov. gen. et spec.* ii. 56 (*Bryonia*).—Torr. et Gr. *Fl. N.-Amer.* i. 540 (*Bryonia*).—Cogn. *Mart. Fl. bras.* lxxviii. 71, t. 20 (*Abobra*); 72, t. 21–24 (*Cayaponia*); 81, t. 25–28 (*Trianosperma*); 94, t. 29; *Griseb. Symb. Fl. argent.* 135.

[5] Small, greenish, yellow or whitish.

[6] Schrad. *Ind. sem. Hort. gœtt.* (1831); *Linnæa*, viii. *Litt.* 23; xii. 408.—Endl. *Gen.* n. 5143.—Payer, *Fam. nat.* 122; *Tr. Organog.* 440, t. 93.—B. H. *Gen.* i. 836, n. 54.—Cogn. *Cucurb.* 822.—*Discanthera* Torr. et Gr. *Fl. N.-Amer.* i. 696.—*Elateriopsis* Ernst, *Flora*, lvi. (1873). 257.

Cyclanthera pedata.

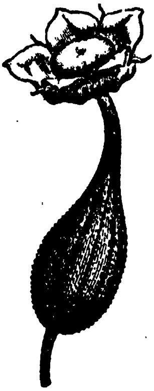
Fig. 238. Female flower.

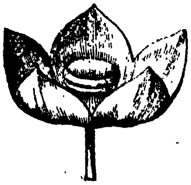
Fig. 237. Male flower.

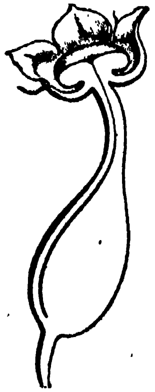
Fig. 239. Long. sect. of female flower.

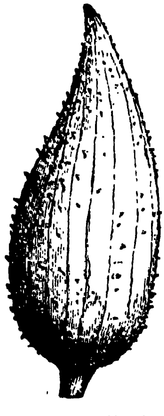
Fig. 240. Fruit.

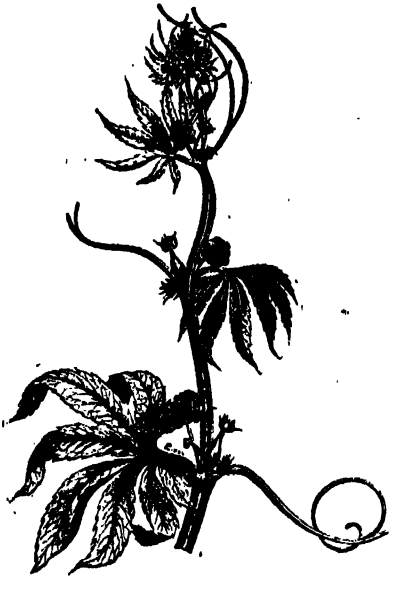
Fig. 236. Flowering branch.

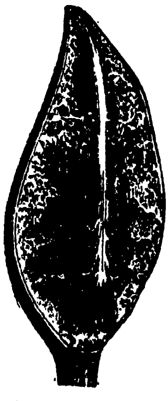
Fig. 241. Long. sect. of fruit.

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[1] The pollen grains are ellipsoid, with 4, 5 longitudinal furrows; in water they become globular, and finally open by a pore on the level of each furrow.

The ovary has only one cell with a parietal placenta, or two or three pluriovulate cells; and on each placenta, often hypertrophiated around the ovules lodged each in a small cellule, the biseriate ovules are ascending, anatropous, with the micropyle turned inwards on the side of the placenta. The fruit is unsymmetrical, often curved, and glabrous, or oftener prickly, especially at its convex margin. It contains but one cell, divided into several cavities, and opens at maturity in a very variable manner, the wall splitting elastically on one side or in several directions, according to the species, and separating from a placentary column, central or lateral, which bears the seeds, and which, at first descending, may rise with the seeds which it bears and scatters sometimes to a considerable distance.[1] The seeds are compressed, angular; and their coat, angular or furnished with unequal points or excrescences, sometimes horn-like, covers a fleshy exalbuminous embryo, with radicle primarily inferior. *Cyclanthera* has sometimes united anthers, not in a continuous horizontal ring, but in a sort of collarette with conduplicate lobes more or less prominent, and the lines of dehiscence thus become more oblique and sometimes nearly vertical. They are climbing herbs with simple or more or less branched tendrils, inhabiting, to the number of forty species,[2] the warm parts of America. The leaves are entire, lobed, digiti- or pedati-nerved and sometimes compound. The flowers, small white or greenish, are monoecious: the males united in simple or compound clusters, and the females solitary beside the male inflorescences.

Hanburia mexicana, also a climbing herb, has monœcious flowers, the campanulate, membranous receptacle of which, with the triangular petals surmounting it, resembles a gamophyllous perianth. Outside the base of the petals are dentiform sepals. The andrœcium is represented by a column at the summit of which the anthers, linear and often closely conduplicate, form a head believed to be composed of numerous cells. The female flowers, with the same perianth and the same bell-shaped portion of the receptacle, have below this a spherical prickly dilatation lodging internally an ovary of four or five cavities. The extremity of the style is dilated to a compressed head; and the fruit, large, sharply ovoid, unsymmetrical, covered with long prickles, opens elastically like that of *Cyclanthera*, to liberate a thick columnar placenta bearing large orbicular seeds similar to those of a *Fevillea*.

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[1] In *C. explodens* Naud. the fruit, concave on one side and convex on the other (where it is prickly), opens lengthwise from right to left, and the concave portion separates from the convex. But the latter takes with it the placenta which was on the convex portion, and which, suspended from its summit, rises. At the same time the grains are detached.

[2] Arn. *Hook. Journ. Bot.* iii. 280.—Pœpp. et Endl. *Nov. gen. et spec.* ii. 54 (*Momordica*).—Benth. *Sulph.* 99.—Naud. *Ann. sc. nat.* sér. 4, xii. 158; sér. 5, vi. 15.—Car. *N. Giorn. bot. ital.* i. 14, t. 1.—Cogn. *Mart. Fl. bras.* lxxviii. 101, t. 32.—Walp. *Rep.* v. 761; *Ann.* iv. 866.

Elaterium, also tropical American herbs, has obliquely ovoid and unsymmetrical fruit opening elastically in the same manner; but in both sexes of flowers, the receptacle is generally an elongate tube; and the anthers, similar to those of *Cyclanthera*, the androecium of which is not annular, form, by their union, a head with deep replicate or flexuose and curved crenelures, dehiscing, however, by a single continuous fissure, flexuose like the anthers themselves and following their contour.

Echinocystis, also American, has the male flower of some *Elateria*, and the ovary of others, with parietal placentas which bear each from two to six ascending ovules, and which, by hypertrophy, may ultimately surround the seeds so as to enclose each in a separate cell. But the prickly fruit is not unsymmetrical; at maturity it opens either by a lid, or by one or two short fissures near the summit, or in an irregular manner.

V. GOURD SERIES.

The Gourds (*Cucurbita*[1]), which have given name to this family, represent only an altered type of it (fig. 242–250), in that their unisexual flowers, generally monoecious, have their stamens, fertile or sterile, nearly always displaced horizontally, like those of *Schizopepon.* Primarily they are alternipetalous, furnished each with a one-celled anther, extrorse, flexuose and sigmoid, with an outer middle fissure following all its sinuosities. But with age, four of the stamens unite two and two, forming two opposite sepalous pairs resembling a two-celled anther; while the fifth retains its position opposite a sepal with its anther one-celled and unsymmetrical. These anthers are not surmounted by a prolongation of the connective to the margins of which they are attached, and the filaments remain more or less completely independent of each other. They are inserted on the inner wall of a receptacular

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[1] L. *Gen.* (1737), 297 (not T.).—J. *Gen.* 396. —DUCH. *Lamk Dict.* ii. 148.—SCHREB. *Gen.* ii. 662.—SER. *DC. Prodr.* iii. 316.—MEISSN. *Gen.* 127 (91).—SPACH, *Suit. à Buffon*, vi. 197. —ENDL. *Gen.* n. 5138.—PAYER, *Organog.* 441, t. 92; *Fam. nat.* 122.—NAUD. *Ann. sc. nat.* sér. 4, vi. 5.—B. H. *Gen.* i. 828, n. 28.—COGN. *Cucurb.* 542.—*Pepo* T. *Inst.* 105, t. 33.—ADANS. *Fam. des pl.* ii. 138.—*Melopepo* T. *Inst.* 106 t. 34.—*Sphenantha* SCHRAD. *Linnæa*, xii. 416 —ENDL. *Gen.* n. 5145.—*Tristemon* SCHEEL. *Linnæa*, xxi. 586 (not RAFIN., nor KL.).—*Pileocalyx* GASPAR. *Rend. d. R. Accad. sc. Nap.* vi. 409.

Cucurbita Pepo.

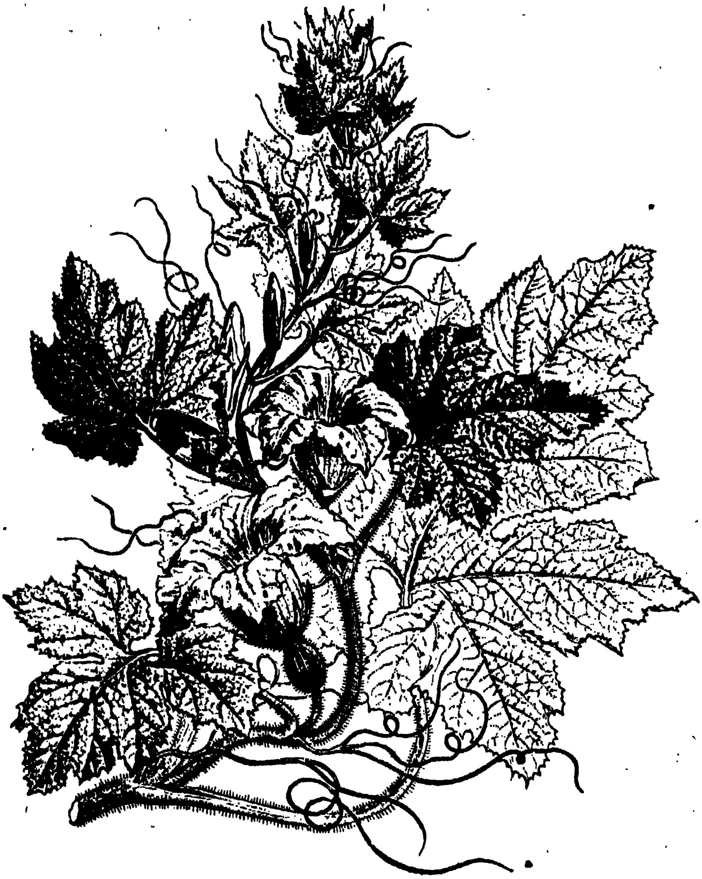

Fig. 242. Flowering branch.

cupule, at the margin of which are inserted a calyx, generally of five[1] narrow sepals, not contiguous at maturity, and a gamopetalous corolla,[2] more or less deeply divided into five lobes which are sometimes free nearly to the base, induplicately quincuncial in the bud and often strongly veined. The cavity of the receptacle is frequently lined with a glandular tissue sometimes more developed at the bottom, where it may be divided into five obtuse lobes.[3] The female flower has the same perianth inserted at the margin of a similar receptacular cup. But the latter is contracted below to a short neck below which it suddenly expands to a spherical or oblong pouch containing the inferior adnate ovary surmounted by a short thick style, soon divided into three[4] branches themselves enlarged at their bifurcate or bilobed stigmatiferous summit. At the base of the receptacular cupule, a thick epigynous disk surrounds the base of a style with a depressed, more or less unequally lobed crown; this is encircled by a rudimentary andrœcium formed

Cucurbita Pepo.

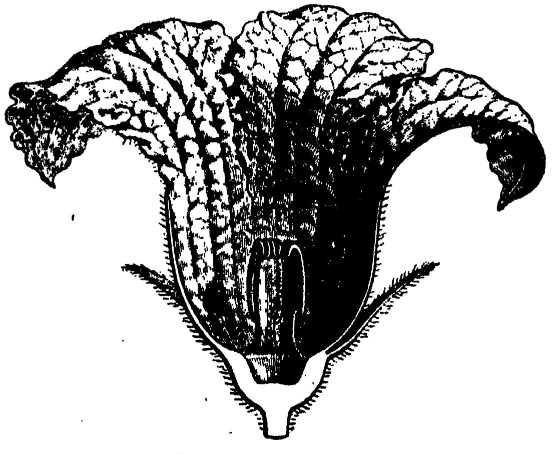

Fig. 243. Long. sect. of male flower.

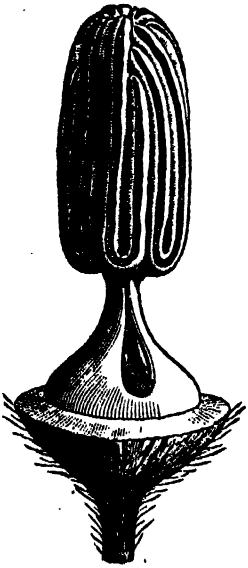

Fig. 244. Male flower, perianth removed.

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[1] More rarely the flower is 4–6-merous.

[2] Charged internally with soft capitate hairs; odour often variable.

[3] Sometimes described as rudiments of the gynœcium.

[4] Or often more under cultivation.

of from three to five thick, triangular, unequal, compressed, generally obtuse staminodes.[1] The ovary is one-celled, nearly filled with three thick placentas[2] of wedge-shaped transverse section, the thick incurved margins of which bear an indefinite

Cucurbita Pepo.

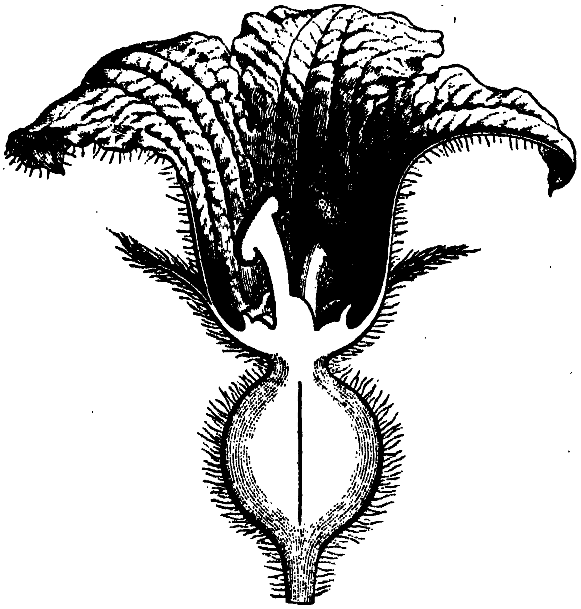

Fig. 245. Long. sect. of female flower (½).

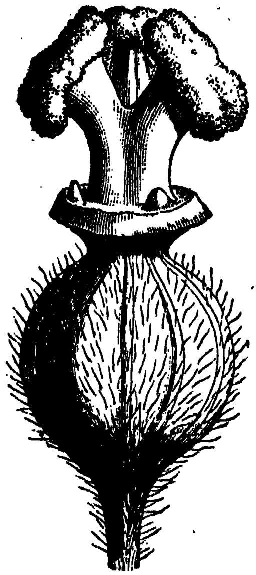

Fig. 246. Female flower, perianth removed.

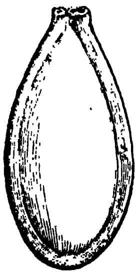

Fig. 249. Seed.

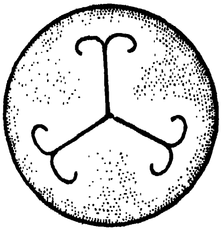

Fig. 247. Trans. sect. of ovary near the top.

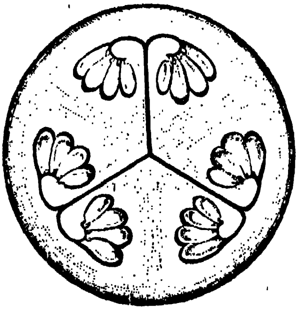

Fig. 248. Trans. sect. of ovary near the middle.

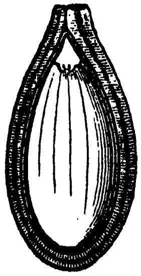

Fig. 250. Long. sect. of seed.

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[1] May occasionally bear a rudimentary anther, sometimes even ovules.

[2] They finally touch by their cuneiform portion, their evolution being centripetal.

number of ovules of various ages, nearly horizontal, anatropous, each imbedded in a cellule formed around it by the hypertrophiated placenta, which becomes more complete with age. The fruit is a berry, generally large, sometimes corticate or fibrous, the pulp of which, formed in great part by the hypertrophiated placentas,[1] encloses an indefinite number of oval or oblong flattened smooth or oftener thick-bordered seeds, containing a fleshy embryo with plano-convex cotyledons and short conical radicle turned towards the point of insertion of the seeds.

The Gourds are herbaceous plants, annual or perennial, by their persistent, thick, turnip-shaped rhizomes. The branches are generally thick, hollow, creeping on the ground and radicant or climbing, provided at the level of the leaves with bi- or pluri-fid lateral tendrils. The leaves, often rough and scabrous, are alternate, petiolate, exstipulate, with a cordate limb often more or less deeply lobed. The flowers[2] are axillar or subaxillar; the males solitary or in cymes; the females usually solitary, with a peduncle generally short.

Cucurbita dioica, *exanthematica*, &c., which have been generically distinguished under the name of *Coccinia*,[3] are Asiatic and American plants having also an imbricate gamopetalous corolla and stamens in groups (2-2-1), but the filaments are nearly always united in a column and more rarely independent. In the female flower, these stamens, though sterile, have perfectly formed anthers. The fruit, generally not large, is ovoid or oblong, and the seeds are smooth or finely pitted. We make them only a section of *Cucurbita*.

C. odorifera,[4] a native of Brazil, has also become the type of a genus, *Sicana*,[5] chiefly because the ovary and seed are elongate, cylindroid. It is a large climbing herb with plurifid tendrils.

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[1] Which are triple, and the outer of which presents, in the wall of its phytocysts, peculiar thickenings which have been pointed out by M. Dutailly (*Adansonia*, x. 206, t. 3, 9), not only in this genus, but also in *Trichosanthes*, *Ecballium*, *Cucumis*, *Bryonia*, *Momordica* and *Citrullus*.

[2] Yellow or white, generally large.

[3] W. and Arn. *Prodr.* i. 347.—Endl. *Gen.* n. 5139.—Rœm. *Syn.* fasc. 2, 16.—Naud. *Ann. sc. nat.* sér. 4, xii. 114.—Cogn. *Cucurb.* 528.—*Cephalandra* Echl. et Zeyh. *Enum.* ii. 280; *Linnæa*, xii. 407.—Endl. *Gen.* n. 5142.—B. H. *Gen.* i. 827, n. 23.

[4] Vell. *Fl. flum.* x. t. 99.—Rœm. *Syn.* fasc. 2, 90.—*C. evodiocarpa* Hassk. *Pl. bogor.* i. 305.—*Curuba* Marcgr. *Bras.* 22.—*Curua* Pis. *Bras.* 262, c. fig.

[5] Naud. *Ann. sc. nat.* sér. 4, xviii. 180.—B. H. *Gen.* i. 829.—Cogn. *Cucurb.* 522.

The corolla is gamopetalous; and the staminal filaments remain independent as in *Cucurbita*, to which we unite this plant as type of a section in which the anthers, sigmoid and very flexuose, are contiguous, but less intimately united than in the true Cucurbitas.[1]

Thus constituted, this genus comprises about twenty-five species,[2] most of them often cultivated, of which half-a-dozen are American, the rest African or Asiatic.

Schizocarpum filiforme.

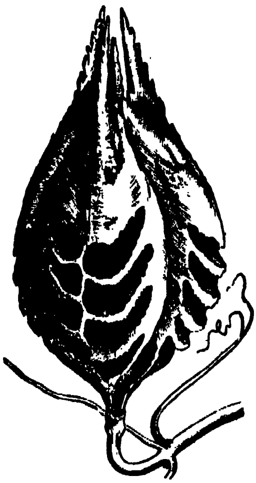

Fig. 251. Dehiscing fruit.

Close beside *Cucurbita* is placed *Schizocarpum* (fig. 251), differing only in the peculiar dehiscence of its fruit. Finally dry, the pericarp divides from the base into three valves which remain adherent above, and on which are seen a number of wide oblique fissures by which escape the smooth, flattened and marginally crenulated seeds. The gamopetalous corolla is campanulate. *Schizocarpum* is Mexican.

Raphidiocystis, monœcious African plants, have also a gamopetalous, campanulate corolla, with pointed lobes and triadelphous stamens with an anther three times folded upon itself. There are no staminodes in the female flower, the ovary of which is hispid. The dry fruit is also covered with dense, brittle aculeate hairs; it encloses compressed and marginate seeds. But the most striking characteristic of the plant is the calyx, the divisions of which are pectinate and pinnatifid. They are climbing herbaceous or woody plants from western tropical Africa and Madagascar.

With an equally gamopetalous, imbricate corolla, *Physedra*, from the same region, has diœcious flowers, narrow setaceous sepals; a style thick, trilobed, stigmatiferous at the summit; staminodes in the female and fertile stamens in the male flower, the anthers of which are quite free. They are also climbing plants, glabrous and glaucous, with 5–7-lobed digitinerved leaves.

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[1] *Peponopsis adhærens* NAUD. (*Ann. sc. nat.* sér. 4, xii. 88.—B. H. *Gen.* i. 829.—COGN. *Cucurb.* 542), an American plant, of which only the female flowers are known, may also perhaps be referred to this genus. Its ovoid ovary and campanulate corolla are those of *Cucurbita*; the style is divided into three large reflexed stigmatiferous branches, and the staminodes are inserted at what is erroneously called the throat of the calyx.

[2] L. *Spec.* ed. 1, 1010; ed. 2, 1435.—LAMK, *Dict.* i. 497 (*Bryonia*).—DUCH. *Dict. sc. nat.* ii. 234; *Lamk Dict.* ii. 151.—H. B. K. *Nov. gen. et spec.* ii. 123.—BL. *Bijdr.* 928 (*Momordica*).—FORSK. *Fl. ægypt.-arab.* 166 (*Turia*).—KL. *Pet. Moss. Bot.* 151 (*Cephalandra*).—COGN. *Mart. Fl. bras.* lxxviii. 19; 17, t. 3 (*Sicana*).—WIGHT, *Ill.* t. 105 (*Coccinia*), 105 *bis*; *Icon.* t. 507.—CLKE, *Hook. f. Fl. brit. Ind.* ii. 621.

Calycophysum, equally gamopetalous, is American. It has tendrils with 3–5 divisions, entire or three-lobed leaves, and large monœcious flowers, solitary, long-pedunculate, especially the females. The calyx is gamosepalous, vesiculate; and the gamopetalous corolla is valvate. The female flowers have staminodes, a funnel-shaped style with three petaloid lobes; and the fruit is a corticate berry, with triangular or fiddle-shaped seeds. The two species known are herbaceous, climbing, and natives of Columbia.

Cionosicyos pomiformis, a climbing Jamaican herb, differs from all the preceding genera in that the monœcious flowers have a rotate polypetalous corolla. The receptacle of the male flower is funnel-shaped, velutinous within. The stamens, inserted on the tube of the receptacle, are in three groups (2-2-1), free, but the anthers united in one oblong mass. In the female flower, the ovary, inferior, ovoid, surmounted by a style with three foliaceous and stigmatiferous branches, becomes a fleshy and polyspermous fruit resembling an orange. The male flowers are solitary and long-pedunculate.[1]

Cucumeropsis has monœcious flowers with an equally polypetalous, campanulate corolla. The male receptacle is campanulate and bears dentiform, subulate sepals. The stamens (2-2-1) have anthers simply recurved in a hook at the summit, and the rudimentary gynœcium at the bottom of the receptacle is simple or triple. The ovary is surmounted by three obcordate and sessile stigmatiferous lobes; it becomes a fleshy fruit. The two species known are annuals, natives of western tropical Africa; they have lobed, rarely entire, leaves, simple tendrils, and male flowers grouped in false umbels at the end of a common peduncle, with a single female flower (when it exists) in the same axil.

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[1] *Dieudonnæa rhizantha*, of Peru, a climbing shrub the flowers of which in clusters are inserted at the leafless base of the stem, and the three-lobed leaves are placed higher on the branches, has been placed here though formerly ranged in *Anguria*. Only the male flowers are known, to which are ascribed a subglobular receptacle, a polypetalous corolla and two free stamens, a peltate anther said to be 2-celled, with no rudiment of gynœcium. The true place of this genus cannot at present be determined.

Dimorphochlamys Mannii, a climbing shrub from Guinea, though closely allied to the preceding types by the androecium and the structure of the corticate berry, is remarkable for the great dissimilarity of the male and female flowers, which are dioecious. The former are united in cymes and supported by a pedicel dilated in two continuous wings with a sort of winged keel bearing two of the sepals; the others are equally carinate. The corolla is gamopetalous, imbricate. The stamens (2-2-1) have anthers three times folded upon themselves, and their free filaments are inserted on the receptacular tube. In the female flower the sepals are linear, expanded; they are reflexed above the corticate and granular berry which they crown. These plants have oval cordate leaves, simple or bifid tendrils, and male flowers grouped in cymes.

Cucumis Melo.

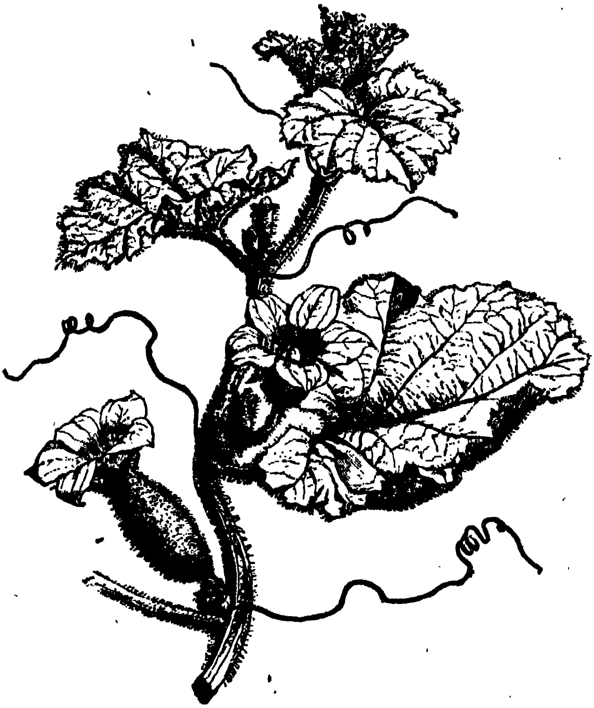


Fig. 252. Flowering branch.

The Cucumbers (*Cucumis*) (fig. 252–258) have flowers similar to those of the preceding genera, monoecious or rarely dioecious, but with a distinctly polypetalous corolla. The males are in cymes or rarely solitary, the females mostly solitary. The sepals are narrow and not contiguous. The petals are imbricated with inflexed involute. The five stamens are in three groups (2-2-1), with free filaments; and the anthers more or less flexuose are free, characterized particularly by a prolongation of the connective, generally papillose, surmounting them. The female flowers have the same perianth as the males, staminodes, and a disk, sometimes much developed. The ovary has three or five parietal placentas which unite in the centre of the flower, forming adjacent angles; and the ovules, numerous and horizontal, are, like those of *Cucurbita*, sunk in the hollows of the placentas. The fruit, very variable in form, smooth on the surface, or covered with thick hard or soft prickles (fig. 258), or tubercles, or hairs (fig. 256, 257), is either entirely fleshy, or corticate on the surface, nearly always inde-

Cucumis sativa.

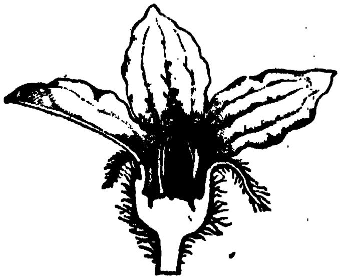


Fig. 253. Long. sect. of male flower.

Cucumis sativa.

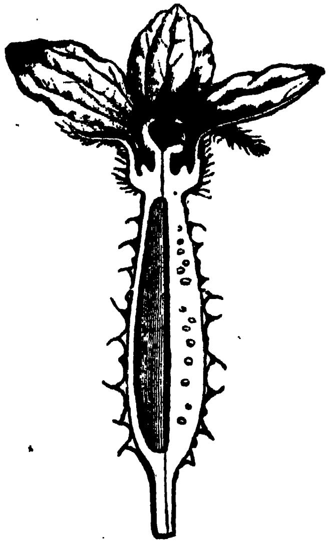


Fig. 254. Long. sect. of female flower.

Cucumis Anguria.

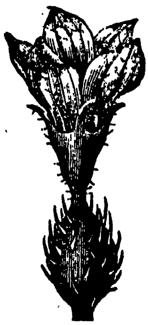


Fig. 255. Female flower.

Cucumis dipsacea.

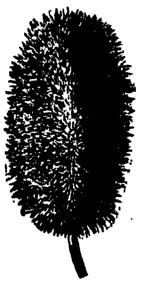


Fig. 256. Fruit.

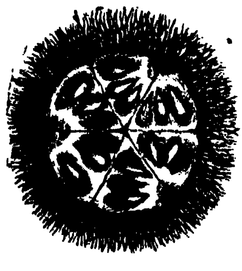


Fig. 257. Trans. sect. of fruit.

Cucumis metulifera.

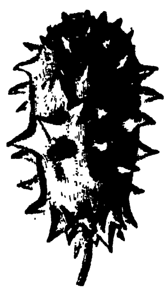


Fig. 258. Fruit.

hiscent; it encloses an indefinite number of seeds, generally not marginate. *Cucumis* consists of annual or perennial plants, rarely climbing with simple tendrils. The leaves are digitinerved, dentate, angular, lobed, or sometimes even dissected. The genus is a native of almost all warm regions of the globe.

Citrullus Colocynthis.

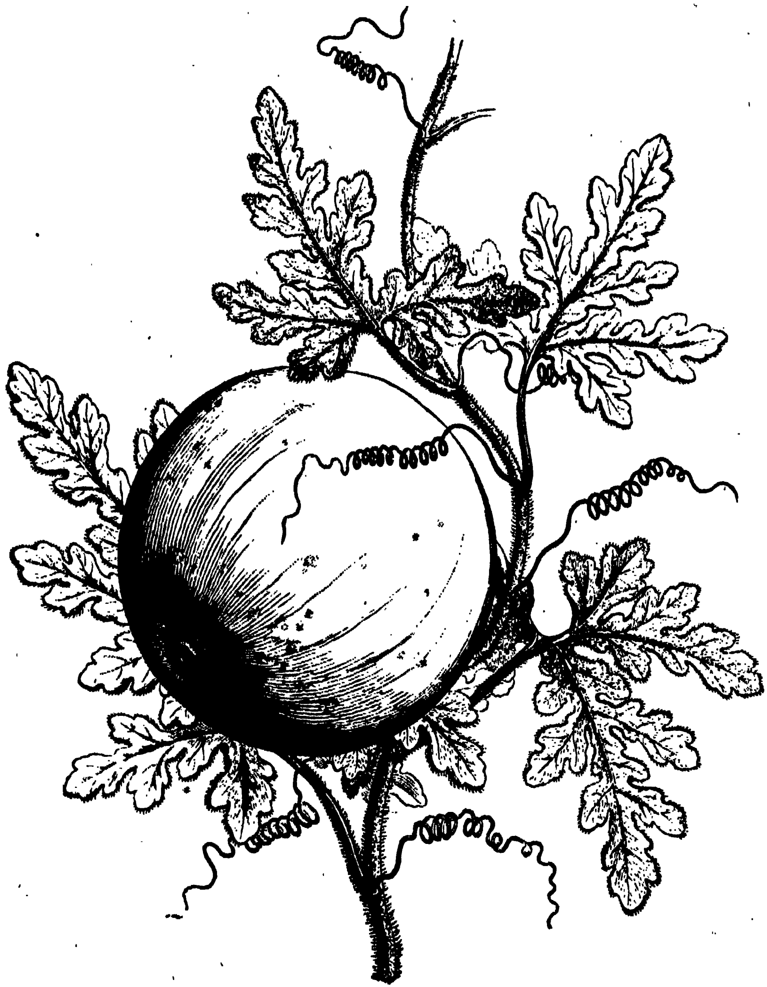


Fig. 259. Fructiferous branch ($\frac{1}{3}$).

We shall see presently (p. 413) that *Dendrosicyos* approaches *Cucumis*. The axillar female flowers have, above the ovary, a cupular receptacle, the margin of which bears five linear sepals and five shorter valvate petals. Within the cup are three very small staminodes. The parietal placentas, three in number, are not in contact, and the style is divided only quite at the top into stigmatiferous lobes. But in this type, represented by erect plants, sometimes arborescent, we shall see, let us here observe, that the anthers are described as rectilinear.

Citrullus Colocynthis.

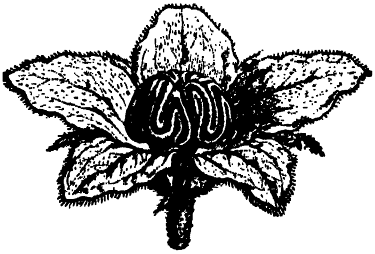


Fig. 260. Male flower ($\frac{4}{1}$).

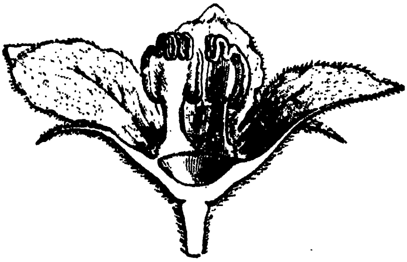


Fig. 261. Long. sect. of male flower.

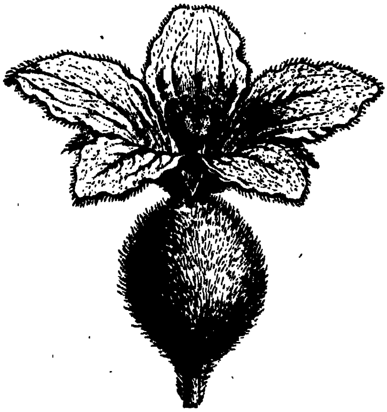


Fig. 262. Female flower ($\frac{4}{1}$).

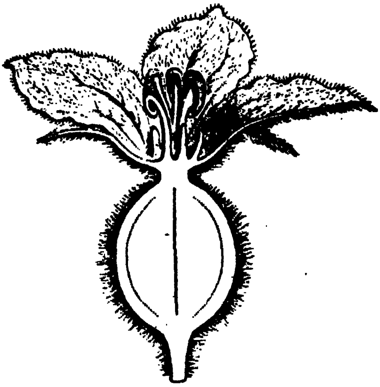


Fig. 263. Long. sect. of female flower.

Citrullus (fig. 259–266) is equally near *Cucumis*, with which it was formerly united. It differs in the extrorse anthers, though sinuous, not being furnished with an apical prolongation of the connective. Most frequently the summit of the cells is inflexed so as to become to a small extent introrse. The sepals are narrow and entire, except in those named *Benincasa*, the calycinal folioles of which are subfoliaceous and serrated at the margin. The leaves are more or less deeply divided, but all have branched tendrils. They are annual, rarely perennial plants of tropical Asia and Oceania.

Citrullus Colocynthis.

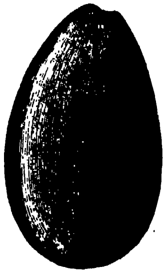


Fig. 265. Seed ($\frac{4}{1}$).

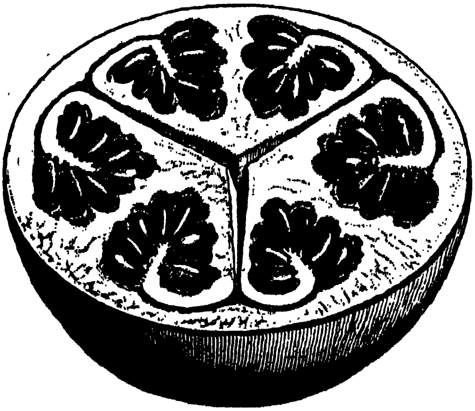


Fig. 264. Trans. sect. of fruit.

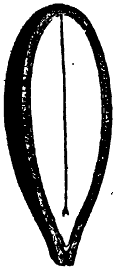


Fig. 266. Long. sect. of seed.

Bryonia has dioecious or more rarely monoecious flowers (fig. 267–273). The males, in most species, are in clusters and have no rudimentary gynœcium. The receptacle is broadly campanulate and bears at its margin five dentiform sepals and an imbricate corolla. The stamens (2-2-1) are otherwise independent, sterile and rudimentary in the female flowers. The latter are in cymes, as are also the males in the section *Bryonopsis*. The fruit is a

Bryonia dioica.

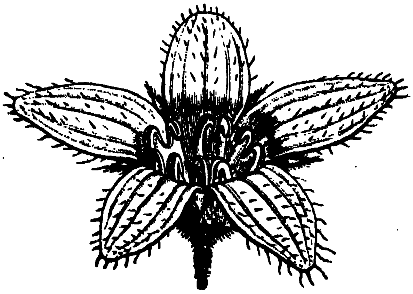


Fig. 267. Male flower ($\frac{4}{1}$).

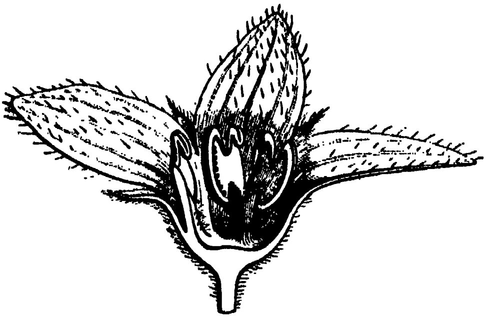


Fig. 268. Long. sect. of male flower.

small berry, generally spherical. They are annual herbs, or oftener with a thick stock whence grow annually sarmentose branches with simple or bifurcate tendrils, and digitinerved, angular or lobed leaves. They inhabit temperate Europe and Asia and the Canary Isles. Species of the section *Bryonopsis* are also met with in southern Asia and Oceania.

Bryonia dioica.

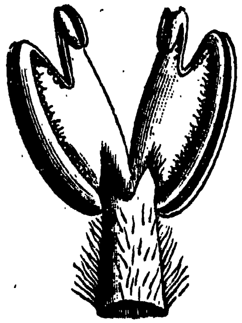


Fig. 269. Double stamen, front view.

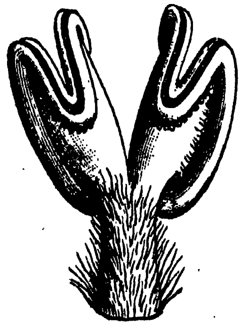


Fig. 270. Double stamen, back view.

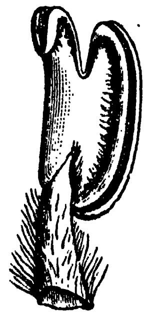


Fig 271. Single stamen, front view.

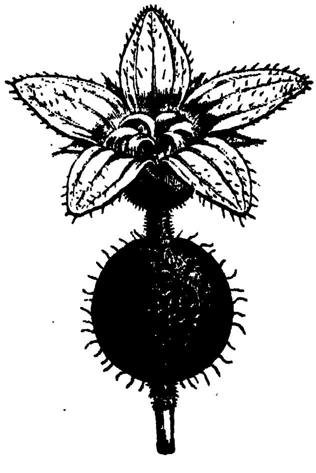


Fig. 272. Female flower ($\frac{4}{1}$).

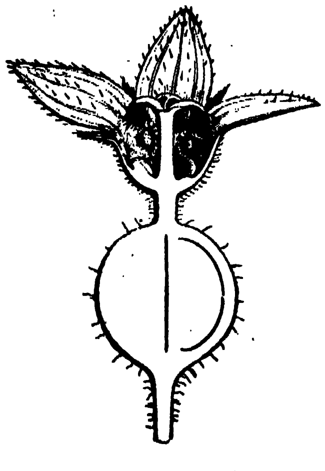


Fig. 273. Long. sect. of female flower.

Ecballium Elaterium (fig. 274–282), a perennial plant of the Mediterranean region, presents quite a different aspect. The herbaceous branches proceeding from the stock creep on the ground and are without tendrils. They bear obtuse, cordate leaves, and monœcious flowers: the males in axillary clusters; the females solitary but inserted at the level of the same axil as the males.

Ecballium Elaterium.

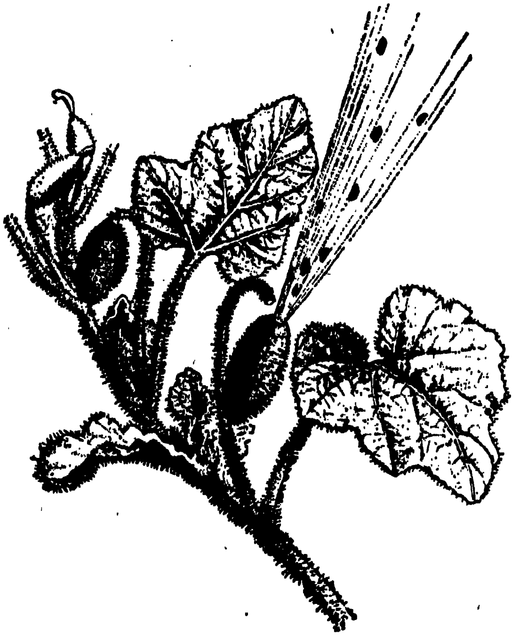


Fig. 274. Fructiferous branch; fruit projecting seeds ($\frac{1}{2}$).

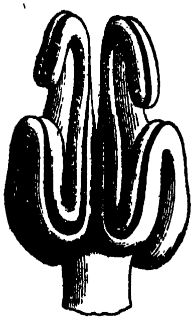


Fig. 276. Double stamen, front view.

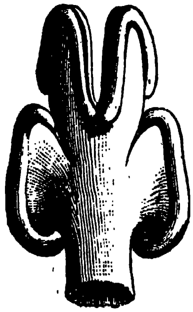


Fig. 277. Double stamen, back view.

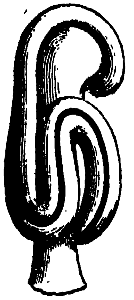


Fig. 278. Simple stamen, front view.

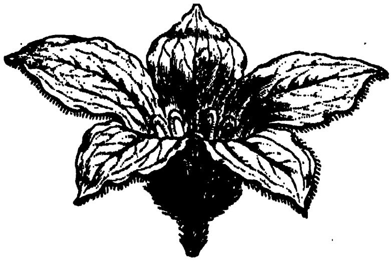


Fig. 275. Male flower ($\frac{4}{1}$).

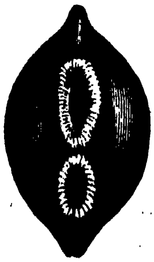


Fig. 281. Seed with aril, seen from above.

The latter are, otherwise, nearly the same in structure as those of *Bryonia*. The female flowers have staminodes and an oblong ovary which becomes a hispid fleshy fruit of the same form. At full maturity it is detached from the peduncle bearing it and, from

Ecballium Elaterium.

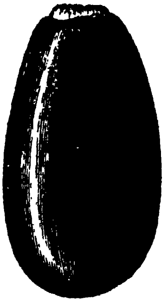


Fig. 280. Seed ($\frac{7}{1}$).

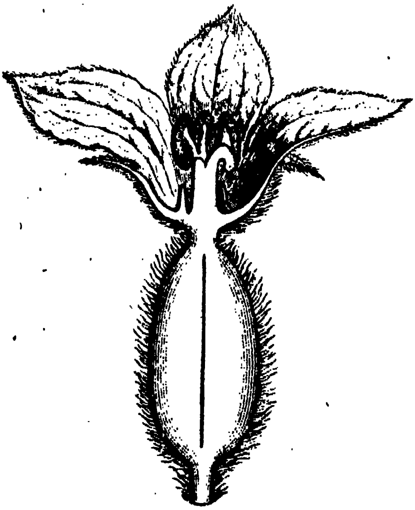


Fig. 279. Long. sect. of female flower.

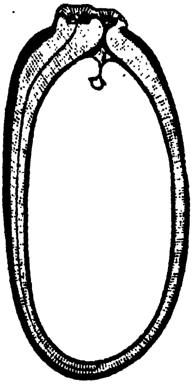


Fig. 282. Long. sect. of seed.

an opening at the base, projects elastically an aqueous liquid and oblong seeds, compressd and smooth, blackish and furnished with a double aril white and fleshy in the form of the figure 8, originating from the hilum and micropyle (fig. 281).

Luffa acutangula.

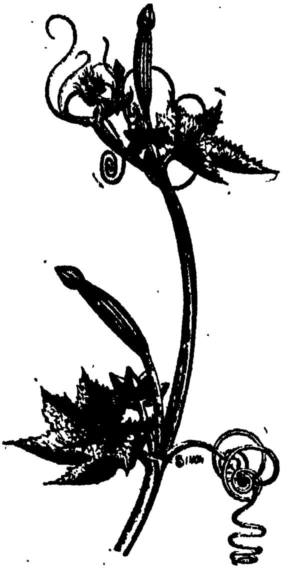


Fig. 283. Flowering branch.

Luffa (fig. 283, 284) has been considered the type of a family because the stamens, whether fertile or sterile, may be superposed, or nearly so, to the sepals. The latter are narrow, inserted on the margin of a receptacular cup lined with a glandular disk, on the walls of which are inserted free stamens, with flexuose anther cells, alternipetalous, as we have said, in some species, whilst in others four of them are more or less approximated horizontally as in *Cucurbita*, *Cucumis*, &c. The gynœcium, rudimentary, is glandular or nil. In the female flower, above the inferior ovary, there is a cup-like dilatation of the receptacle which bears, outside an annular disk, equidistant or approximated staminodes, and a perianth similar to that of the male flower, that is, most frequently with a valvate calyx and imbricate petals. The style is surmounted by a stigmatiferous head with three large bilobulate lobes; and the fruit is dry, cylindrical or oblong, smooth or angular, formed for the most part of a fibrous and reticulated tissue resembling lace. At maturity the fruit opens by an aperture at the summit. The Luffas are climbing annuals, all of the old world except one American species; they are monœcious, and have lobed leaves and branched tendrils.

Luffa acutangula.

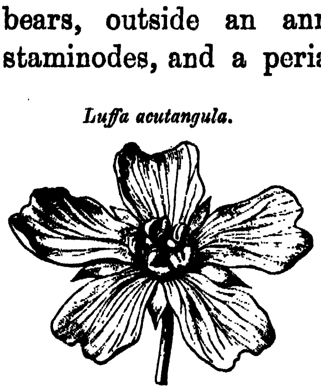


Fig. 284. Male flower.

Momordica (fig. 285–291), closely resembling *Luffa*, forms a transition from this type to the slightly irregular form of *Thladiantha*. There are, in fact, Momordicas whose male flowers have, on the margin of the cupular receptacle, five quincuncial sepals and five equal and imbricated petals. But they may be slightly dissimilar and not all of the same tint. Moreover three of them oftener have at the base a sort of glandular claw decurrent and extending towards the axis of the flower. The regularity of this is again interrupted when there are only two instead of three of these processes. The stamens, furnished with an anther having one curved or flexuose cell, may be five in number and alternipetalous; but more generally four, or only two, may more or less coalesce in pairs from the middle line within the petals. The rudimentary gynœcium is represented only by a glandular projection, or not at all. In the female flower there are often glandular staminodes; the ovary, inferior, oblong or fusiform, encloses three parietal placentas, with ovules nearly

Momordica Balsamina.

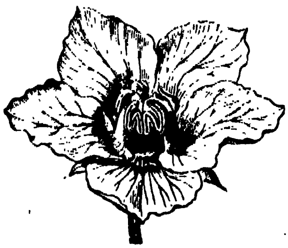
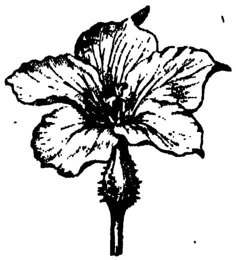


Fig. 285. Male flower.



g. 286. Female flower.

always numerous and horizontal. But in those of the section *Raphanistrocarpus* (fig. 289–291), the ovary encloses only a few ovules, which rise or descend in its narrower cavity. By this particular this section forms a connecting link between the true Momordicas and those of which a genus *Raphanocarpus* has been made, and which have, in a still narrower and shorter ovary, only two ovules, one ascending, the other descending. Also, while the fruit is oblong, cylindrical or fusiform, but always broad relatively to its length, in the true Momordicas, that of *Raphanistrocarpus* resembles a long siliqua, somewhat contracted between the seeds, and that of *Raphanocarpus* a short fusiform siliqua.

Momordica

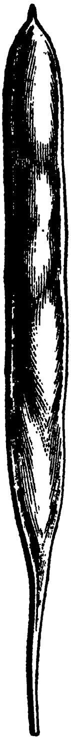


Fig. 289. Fruit.

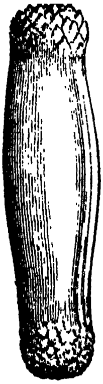


Fig. 290. Seed ($\frac{4}{1}$).

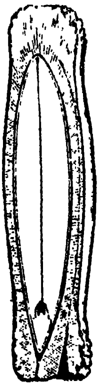


Fig. 291. Long. sect. of seed.

Momordica Charantia.

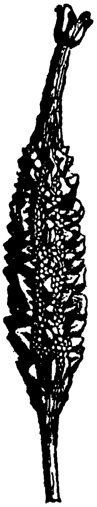


Fig. 287. Young fruit.

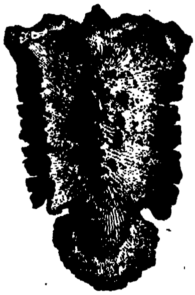


Fig. 288. Seed ($\frac{3}{1}$).

Acanthosicyos horrida, from Angola, is a Cucurbitaceous plant quite exceptional in its habit: it is an erect shrub with numerous branches, spinous, leafless, or rather the leaves reduced to scales, more like a Thornbroom. The flowers have five unequal coriaceous sepals hardened at the summit, and coriaceous and entire petals. The fruit is a corticate and polyspermous berry, covered with warty excrescences from the centre of which springs a conical spine.

Lagenaria, the affinities of which with *Cucurbita* and *Cucumis* are numerous, has been referred to a separate group in which the petals are entire, the gynœcium rudimentary glandular or nil, the anthers free or slightly coherent. In *L. vulgaris*, prototype of the genus, the flowers are monœcious; and the petals, white, broadly oboval, are strongly reticulate-veined; the ovary is that of a Cucumber; the fruit is corticate, the stem annual, and the odorous leaves furnished with two glands at the end of the petiole. In *Adenopsis*, which we refer as a section to this genus, the petiolar glands are also met with; but the flowers are diœcious and the anthers are coherent. The same is the case in *Sphærosicyos*, another section of the genus, the type of which is *L. sphærica*, which has free anthers, like those of *L. vulgaris*, though contiguous at the head, and the style is less deeply divided at its stigmatiferous extremity. The stem is perennial at the base.

Peponia is very near *Lagenaria*. They are African plants and have monœcious flowers with yellow oboval petals. The receptacle of the male flowers is tubular, sometimes enlarged at the base. The petals are free and entire. The anthers cohere in an ovoid mass and are three times folded upon themselves. In the female flower the receptacular tube is contracted above the ovary, the placentas of which are distinctly parietal, pluriovulate; and the fleshy fruit is cylindrical or ovoid. They are prostrate or climbing herbs with simple or bifid tendrils. The female flowers are solitary; the males are solitary or in clusters.

In *Herpetospermum*, Himalayan climbing plants, the diœcious flowers have entire, imbricate petals, a sterile gynœcium, erect at the bottom of the tubular receptacle of the male flower, and, in the female flower, an ovary with united placentas, thus forming three cavities in each of which are found a few (3–6) ovules, often descending. The fruit is dry, 3-angled and 3-valved.

Biswarea tonglensis, from the mountains of India, resembling in general structure the species of the preceding genus to which it was primarily united, differs from it by its induplicate petals inserted on the margin of the orifice of a lageniform receptacle. The rudimentary gynœcium is truncate at the summit; in the fertile ovary of the female flower the ovules are numerous, horizontal.

Gymnopetalum, with the flowers of the preceding genera, has a fleshy pubescent or scabrous fruit not dehiscent. They inhabit the warm regions of Asia and Java. Notwithstanding the differences, not constant, in the form of the leaves, the condition of the summit of the connective which, instead of being glabrous, becomes more or less papillose, and the length of the stylary branches, we can only place as a section of this genus *Trochomeria*, inhabiting tropical and southern Asia, and having the same floral organization.

Eureiandra is from tropical Africa. With the flowers of the preceding genera, diœcious, they have floral characters both of these types and of *Lagenaria*. The stamens are free, sterile in the female flowers. These are solitary, and the ovary with three placentas is surmounted by a style with cordate stigmatiferous divisions. The fruit, fleshy, ovoid or fusiform, encloses seeds nearly globular, which is exceptional in this family. The male flowers are likewise solitary or sometimes geminate, and the tendrils are simple.

Cognauxia podolæna, from the Gaboon, is closely allied to *Eureiandra* by its male flower, the stamens of which have an anther closely replicate. The lageniform receptacle, contracted in a long neck, bears a short calyx and long unsymmetrical imbricate petals. But the male flowers, the only ones known, are at the end of a long axillate peduncle, the base of which is bare, and the axillant bracts of the compressed pedicels are drawn with them and are detached only a little below the floral receptacle.

A small separate group is formed by *Trichosanthes*, which has monœcious or diœcious flowers, with cylindrical male receptacles; entire, dentate or laciniate sepals; petals fimbriate or prolonged in a tendril, and stamens (2-2-1) with flexuose anthers inserted near the throat of the receptacle. The fruit is fleshy, often globular, with numerous compressed or angular seeds. They are larger and fewer (twelve, of which six only are fertile) in *T. macrocarpa*, type of the section *Hodgsonia*, the fruit of which is depressed and has twelve furrows. They are herbaceous or shrubby plants, sometimes gigantic, from the warm regions of Asia and Oceania, with entire, lobed or compound digitate leaves. Near *Trichosanthes*, *Delognæa Humblotii*, from Madagascar, has independent exserted anthers, without rudimentary gynœcium, and the seeds with a large oily embryo are thick and broader than long.

We also establish a separate sub-series for *Thladiantha* (fig. 292), which has a truly irregular flower, not in the calyx, nor in the polypetalous, campanulate corolla, with folioles nearly equal; but the stamens are unequal. That which remains superposed to a sepal while the four others, remaining free, approach more or less in pairs, is the smallest of all. Moreover, the receptacle, convex in the centre, sends out from its outer margin a sort of broad horizontal scale, afterwards incurved, reminding one of the claws of the petals in *Momordica*, but which is unique, much more pronounced, and gives a great irregularity to the axile portion of the male flowers. The females have five staminodes, a trifid style; and the fruit is an oblong berry. They are perennial climbing plants, with simple tendrils, inhabiting Java and south-eastern Asia.

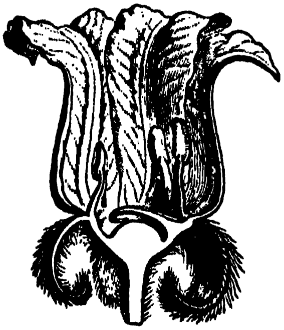


Fig. 292. Long. sect. of male flower ([illegible]).

VI. MELOTHRIA SERIES.

The flowers of *Melothria*[1] (fig. 293–295), monœcious or rarely diœcious, sometimes hermaphrodite, are regular and similar to those of the preceding series. But the anthers, five, more rarely six in number, united in three free fascicles, one of which, sometimes diandrous, is oftener composed of only a single stamen, have a straight or slightly curved cell applied vertically to the margin of a connective surmounted or not by an apical projection. At the centre of the male receptacle, cupular or campanulate, is a rudimentary, globular gynœcium, entire or trilobed.[2] In the females the receptacle is dilated, below a contracted neck, in a spherical, ovoid or piriform sac enclosing the inferior ovary; and the seeds, sometimes few, are smooth, rarely scrobiculate, generally marginate. The species of this genus, about fifty in number,[1] are annual or perennial herbs, creeping or climbing, with entire or lobed leaves, with tendrils almost always simple. The flowers[2] are in false corymbs or sometimes solitary.

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[1] L. *Hort. Cliff.* 490; *Gen.* n. 50.—J. *Gen.* 395.—SER. *DC. Prodr.* iii. 313.—SPACH, *Suit. à Buffon*, vi. 224.—ENDL. *Gen.* n. 5126.—NAUD. *Ann. sc. nat.* sér. 4, xii. 148; xvi. 168; xviii. 195.—B. H. *Gen.* i. 830, n. 34.—*Zehneria* ENDL. *Prodr. Fl. norfolk.* 69; *Gen.* n. 5127.—B. H. *Gen.* i. 830, n. 33.—*Pilogyne* SCHRAD. *Ind. sem. H. gœtt.* [1835]; *Eckl. et Zeyh. Enum.* 277.—NAUD. *loc. cit.* sér. 5, v. 36.—*Landersia* M. FAD. *Fl. jam.* ii. 142 (ex B. H.).—*Mukia* ARN. *Hook. Journ. Bot.* iii. 271.—NAUD. *loc. cit.* sér. 4, xii. 141.—B. H. *Gen.* i. 829, n. 32.—*Karivia* ARN. *loc. cit.* 275.—ENDL. *Gen.* Suppl. ii. 77.—*Diclidostigma* KZE, *Linnæa*, xvii. 576.—*Juchia* RŒM. *Syn.* xi. 48 (not NECK.).—*Harlandia* HNCE, *Walp. Ann.* ii. 648.

[2] Immediately below which the stamens are sometimes inserted. The pollen is ovoid, with three furrows; it opens by three pores.

Melothria indica.

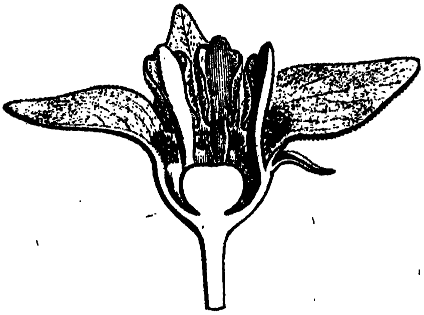

Fig. 293. Long. sect. of male flower ($\frac{8}{1}$).

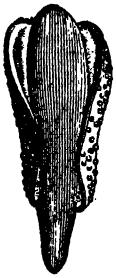

Fig. 294. Stamen, back view.

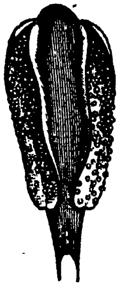

Fig. 295. Stamen, front view.

Beside this genus are ranged:

Wilbrandia, from Brazil, in which the sessile anthers are inserted on the receptacular wall by the middle of their back, and the style, with two bifid stigmatiferous branches, is surrounded at the base by an epigynous disk. The multiovulate placentas are normally two in number.

Oreosyce africana, from Guinea, a hispid herb, with anthers united, cylindrical style dilated at the top in a trilobed stigmatiferous head. The male flowers are solitary or 2-3-nate.

Apodanthera, American plants, creeping or climbing, which appear in this series the analogues of *Cucurbita*, having its flowers, but with straight free anthers, united on the receptacle. The inflorescences are in clusters.

Dactyliandra Welwitschii, from western tropical Africa, is an annual, exceptional in this group, in that its stamens (2-2-1) have hippocrepiform anthers (which connects this type also with the Cucurbiteæ). It is a climbing plant, with simple tendrils, 5–7-digitate lobed leaves, the petiole of which has a sort of stipuliform foliole at its base.

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[1] LOUR. *Fl. coch.* 35.—W. *Spec.* i. 189.—BENTH. *Hook. Nig. Fl.* 367; *Fl. Austral.* ii. 320.—VELL. *Fl. flum.* 29; Atl. i. t. 70.—CLKE, *Hook. Fl. brit. Ind.* ii. 623 (*Mukia*), 624 (*Zehneria*), 625.—HARV. *Thes. cap.* t. 94; ii. t. 182 (*Zehneria*).—COGN. *Mart. Fl. bras.* lxxviii. 24, t. 5; *Rel. Rutenb.* iv. 250.—HOOK. F. *Oliv. Fl. trop. Afr.* ii. 558 (*Zehneria*), 561 (*Mukia*), 562.

[2] Small, yellowish or white.

Blastania, Asiatic and tropical African annuals, belong to a sub-series in which the epigynous disk disappears entirely or nearly so. The stamens are straight, short, ovoid or ellipsoid, and the two or three placentas observed in the female flower bear each only a single ovule nearly horizontal. The fruit, subglobular or broader than long, unarmed, encloses one, two or three seeds.

In *Muellerargia timorensis*, a very slender climbing herb, the anthers are said to be sessile, dorsifixed, slightly curved ; and the fruit, indehiscent and rostrate, is muricate and polyspermous.

Pisosperma capense is a small herb with trailing branches, the male flower of which has a lageniform receptacle, bearing anthers (2-2-1) nearly sessile at the throat, whilst in the female flower the ovary, surmounted by a long receptacular neck crowned by the perianth, encloses some 6–12 ovules, each lodged in a placentary cellule. The female flowers are solitary, and the males are in clusters, the pedicels of which, enlarged at the base, bear at a certain height the axillant bract raised with them.

Toxanthera natalensis represents a neighbouring type of *Pisosperma*. It is a climbing herb of Natal with lobed leaves, polypetalous male flowers having five stamens (2-2-1), with anthers all free, dorsifixed, curved. The female flower has an ovary with two pluriovulate placentas, surmounted by a style with two broad fan-shaped lobes.

In *Kedrostis*, inhabiting tropical Africa and Asia, the male flowers have stamens the connective of which is generally prolonged in a horn more or less prominent above the anther, which is supported by an erect filament, straight or slightly curved. The fruit is a berry, ordinarily rostrate, indehiscent in *Kedrostis* proper, and on the other hand, opening transversely close to the base in those named *Corallocarpus*.

Melancium campestre, a creeping Brazilian herb, without tendrils, the thick rhizome of which sends out slender branches each year, has monœcious flowers the petals of which are furnished with two auricles at first inflexed. The anthers, dorsifixed, are slightly curved, and the oblong ovary is surmounted by a style with trilobed stigmatiferous head.

In the closely allied genus *Trochomeriopsis*, represented by a glabrous herb from Madagascar with simple tendrils, the diœcious flowers present a very different external appearance, owing to the great elongation of the receptacular tube. There is no rudimentary gynœcium in the male flower. But the inferior ovary becomes very long in the female flower, where it encloses two or three parietal placentas, growing later so as to form four or six series of cellules. The style terminates in two or three bilobed petaloid blades, and has at the base a thin epigynous disk. The unripe fruit is siliquiform.

Edgaria darjeelingensis represents in this group the type of *Herpetospermum* and *Biswarea*, with straight anthers. The male receptacle, lageniform, with a long neck, bears at the bottom of its cavity a subulate rudimentary gynœcium. The fruit, triangular dry, fibrous, opens at maturity in three thick valves. It is a perennial climbing plant of Himalaya with entire, cordate and oval leaves.

Dendrosicyos is also exceptional in the family by its erect arborescent trunk. The male flowers are said to have stamens with straight anthers. The female are similar to those of a *Cucumis* with three parietal placentas, and the ovary is surmounted by a cupule the margin of which bears the perianth. They are African.

Ceratosanthes gives name to a small group (*Ceratosantheæ*) in which the insertion of the stamens of the male flower is at the orifice of the receptacle. A native of tropical America, this genus has monœcious or diœcious flowers, generally in clusters, with white petals, thick and bilobed, involute at the summit. The anthers (2-2-1) are sessile, straight, extrorse, primarily adherent sometimes fertile in the female flowers.

Maximowiczia (fig. 296–298) is extremely near the preceding genus. But the diœcious flowers have entire or sinuate, not bilobed petals. The receptacular tube is cylindrical or nearly so with a rudimentary gynœcium very little developed in the male flower. The anthers, oblong (2-2-1), are nearly sessile at the throat of the receptacle. They are sterile in the female flower which has the same receptacle and perianth, with an inferior globular, multiovulate ovary, which becomes a berry of the same form. They are perennial climbing plants from the south-west of N. America, with deeply divided leaves, simple tendrils and small yellow flowers.

Maximowiczia Lindheimeri.

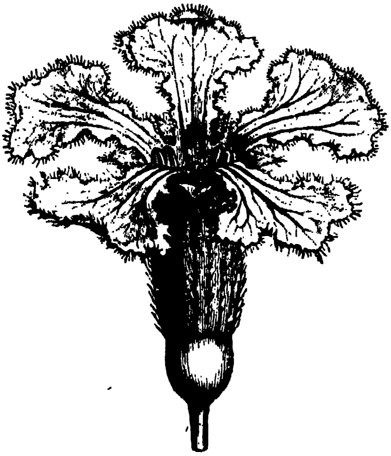

Fig. 296. Male flower ($\frac{4}{1}$).

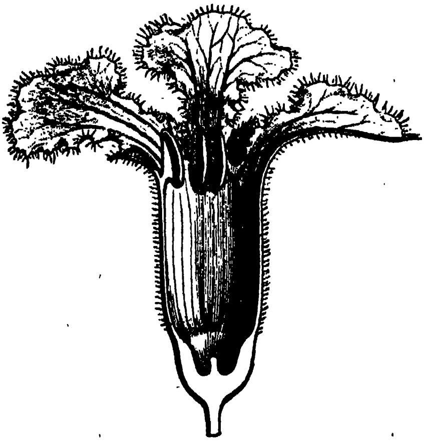

Fig. 297. Long. sect. of male flower.

With the same floral organization, *Cerasiocarpum Bennettii* has monœcious flowers, a broadly campanulate receptacle, stamens with a short filament and patelliform anthers. The ovary contains two or three pauciovulate placentas; and the fruit, transversely oblong, contains only a few ovoid seeds. It is a climbing herb of Java and Ceylon, with cordate, hastate or trilobed leaves.

Lindheimeri.

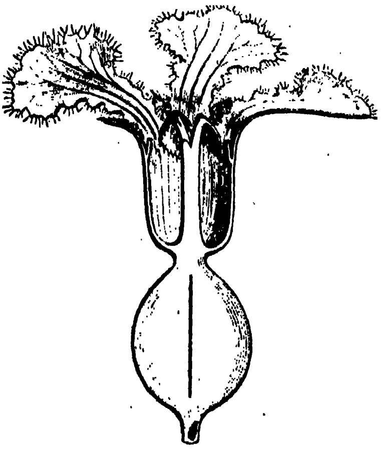

Fig. 298. Long. sect. of female flower.

Cucurbitella, representing this sub-series in extratropical S. America, is an exceptional type from its ovary having often (not constantly) five parietal placentas, and from the style being broadly and unequally 5–10-lobed at the top. The petals are thick, imbricate or induplicate. The anthers (2-2-1) are curved or nearly straight. The fruit is a berry with 5–10 furrows. They are rough climbing herbs with a perennial stock, entire lobed or divided leaves and simple tendrils. They connect the series under review with *Cucurbita*, and especially with *Cucumis*.

VII. TELFAIRIA SERIES.

Telfairia[1] (fig. 299–301) has diœcious flowers. The male receptacle, obconical and widely open, bears at its margin five denticulate sepals, imbricate at first, and five alternate petals, dentate and fringed at the margin, slightly united below, imbricate in the bud. The base is furnished with a decurrent, crenulate blade of variable form. The most remarkable point in the organization is the andrœcium, formed of five stamens with slender filaments, and the connective of which, dilated and basifixed, bears at its margin two curved anther cells, dehiscing outwards or near the margin by two longitudinal clefts.[2] In the female flower the receptacular cup is prolonged below in an oblong sac, lodging in its cavity the inferior ovary. The latter is surmounted by a short exserted style with capitate and three-lobed stigmatiferous extremity, divided

Telfairia pedata.

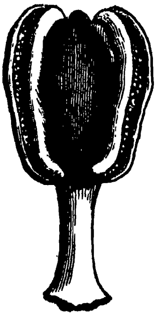

Fig. 300. Stamen, front view.

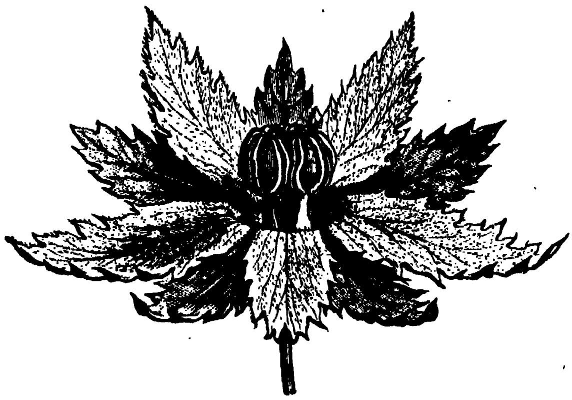

Fig. 299. Male flower ($\frac{1}{2}$).

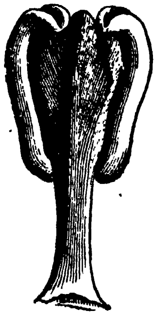

Fig. 301. Stamen, back view.

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[1] HOOK. *Bot. Mag.* t. 2751, 2752; *Bot. Misc.* ii. 154, t. 81.—ENDL. *Gen.* n. 5123.—B. H. *Gen.* i. 821, n. 2.—COGN. *Cucurb.* 349.—H. BN, *Bull. Soc. Linn. Par.* 473.—*Jolifia* BOJ. et DEL. *Mém. Soc. Hist. nat. Par.* iii. 314, t. 6.—SER. *DC. Prodr.* iii. 316.—SPACH, *Suit. à Buffon*, vi. 191.

[2] The pollen is globular, smooth (COGN.).

into three, four or five cavities, these again partly divided into two cellules. The ovules are numerous, anatropous and nearly horizontal. The fruit is an elongate berry, dilated at the base, traversed by prominent ribs and enclosing, in the interior pulp of its 3–5 cavities, numerous, large, orbicular, compressed seeds, surrounded by a fibrous vestment and containing a fleshy embryo without albumen. The two Telfairias known[1] are African: one from the tropical western coast, the other from the southern zone, introduced and cultivated on the eastern coast and neighbouring islands. They are large shrubby bindweeds with alternate, compound-digitate leaves, dentately or laciniately 3–5-foliolulate, auriculate at the base. The male flowers[2] are in clusters, the female solitary.

We doubtfully place in this series, as a sub-series (*Angurieæ*), a group of two American genera, the flowers of which appear to be furnished with bilocular anthers, but only two in number, sessile and inserted at a variable height on the receptacular tube. *Anguria* (fig. 302–304) proper has, in the male flower, a greenish tubular or sac-like receptacle, while in the genus *Gurania* it is reddish. The calycinal divisions are dentiform in the former, much longer and more pointed in the latter, which have much smaller and thicker petals.[3] But in the female flowers of some species with petals in form and substance intermediate between the two types; the cha-

Anguria pedata.

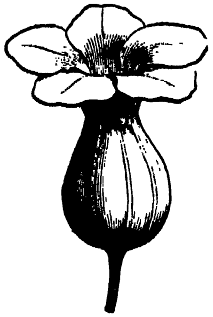

Fig. 302. Male flower.

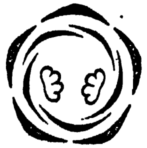

Fig. 303. Diagram of male flower.

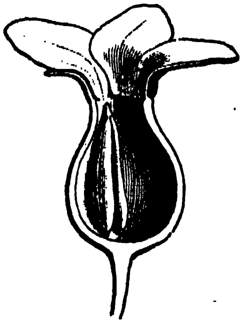

Fig. 304. Long. sect. of male flower.

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[1] Sm. *Bot. Mag.* t. 2681 (*Fevillea*).—Hook. f. *Oliv. Fl. trop. Afr.* ii. 523; *Bot. Mag.* t. 6272 *Proc. Linn. Soc.* (1873), 27. Perhaps also these are only two forms.

[2] With a reddish or whitish corolla; the pulp of the fruit is yellow.

[3] Sometimes contracted like the stamens (H. Bn, *Bull. Soc. Linn. Par.* 300).

racters of the diandrous andrœcium and of the gynœcium are the same in all; the two cells of the dorsifixed anthers are generally a little curved, with longitudinal dehiscence, bordering a narrow connective surmounted by an apicule.

Helmontia, likewise American bindweeds, belong to the same group by their bilocular stamens, inserted higher, that is at the neck of the receptacle. The female flowers are unknown.

The family of Cucurbitaceæ was first indicated in 1759 by B. de Jussieu,[1] afterwards well established by Adanson[2] under the name of *Bryoniæ*. A.-L. de Jussieu[3] reproduced the framework of his predecessors, adding thereto *Gronovia*, and, as allied genera, the Passifloreæ which he knew and the Papayas. Seringe,[4] describing the family for the *Prodromus*,[5] enumerated twenty-one genera, and divided it into two tribes distinguished erroneously by the insertion of the tendrils. Enriched by the labours of Wight, Arnott, Schrader, Endlicher,[6] Harvey and Sonder, and Messrs. Bentham and Hooker, this family, in the imperfect studies of Naudin, was considered to comprise about fifty genera. In 1867 about 470 species were assigned to it. M. Cogniaux, in a review of the whole, perseveringly followed and published in 1881 in sequels to the *Prodromus*,[7] accompanied with preliminary and accessory researches,[8] carried the number of genera to 80, divided into eight tribes and comprising 600 species. The three genera *Dendrosicyos*[9] *Toxanthera*[10] and *Cogniauxia*[11] have since been added, to say nothing of the imperfectly known genera, such as *Ampelosicyos*;[12] which in our view brings the total number of genera up to 68, distributed in seven series with the following general characters:

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[1] *A.-L. Juss. Gen.* lxx.

[2] *Fam. des pl.* ii. (1763), 135, Fam. 18.

[3] *Gen. plant.* (1789), 393, Ord. 2.

[4] *Mémoire sur la famille des Cucurbitacées*, Genève (1825).

[5] iii. (1828), 297, Ord. 80.

[6] *Gen.* 933, 934, Ord. 201, 202.

[7] *DC. Monogr. phanér.* iii. 325.

[8] *Soc. bot. Belg.* v. 17; xvii. &c.; *Mart. Fl. bras.* lxxviii. 1; *Bullet. Soc. Linn. Par.* 425.

[9] Balf. f. *Proceed. Roy Soc. Edinb.* xi. (1882).

[10] Hook. f. *Icon.* t. 1421 (1883).

[11] H. Bn, *Bull. Soc. Linn. Par.* 423 (1884).

[12] *Ampelosicyos* Dup.-Th. *Hist. vég. isl. Afr. austr.* 68.—Cogn. *Cucurb.* 946. Erroneously referred by Bentham and Hooker (*Gen.* i. 821) to *Telfairia*, this genus has diœcious flowers (?): the males solitary; receptacle concave with 5 calycinal teeth, 5 petals and stamens in three groups (2-2-1); anther cells flexuose. *A. scandens* Dup.-Th. is a herb of Madagascar, with twining stems, petioles charged with rude hairs of the colour of rust, with simple tendrils and compound digitate 5-nate leaves.

I. FEVILLEÆ.[1]—Stamens 5, free, alternipetalous, equidistant, or 4 contiguous in pairs superposed to two petals. Anthers one-celled. Ovary 1–3-celled. Placentation axile. Ovules 1–∞ in each cell, descending.—8 genera.

II. SECHIEÆ.[2]—Stamens 5, 4 contiguous in pairs opposite petals, with one-celled anthers. Ovary one-celled. One descending ovule.—5 genera.

III. PERIANTHOPODEÆ.[3]—Stamens 5, 4 contiguous in pairs opposite petals. Anthers one-celled. Ovary 1–3-celled. Ovules 1–4, normally ascending or suberect.—3 genera.

IV. CYCLANTHEREÆ.[4]—Anther circular continuous, or stamens 2, 3, with one-celled, flexuose anthers united in a continuous crown. Ovary with one or many cells. Ovules suberect or ascending.—4 genera.

V. CUCURBITEÆ.[5]—Stamens 5, 4 mostly contiguous in pairs opposite petals, free or united, with flexuose, sigmoid or conduplicate anthers. Ovary generally one-celled, with prominent and voluminous placentas. Ovules horizontal.—27 genera.

VI. MELOTHRIEÆ.[6]—Characters of Cucurbiteæ; anthers straight or slightly curved, not flexuose.—18 genera.

VII. TELFAIRIEÆ.[7]—Characters of Cucurbiteæ; anthers 5, 2-celled, with flexuose cells (*Eutelfairieæ*), or 2, with straight cells (*Anguricæ*).—3 genera.

We take no further account of imperfectly known or doubtful genera, the principal of which are the following:

Siolmatra H. BN, *Bull. Soc. Linn. Par.* (1885), 457. We have given this name to *Alsomitra brasiliensis* COGN., which is characterized by an ovary of 3 cells, surmounted by 3 excentric stylary branches, with 2 descending ovules suspended in each cell. *S. brasiliensis* is climbing, with bifid tendrils and trifoliolate leaves.

Alternasemina S.-MANS. *Enum. subst. bras. cath.* 35. Is perhaps (COGN.) a synonym of *Perianthopodus*.

Dermophila S.-MANS. *loc. cit.* 31. Synonym (?) of *Perianthopodus* (COGN.).

Druparia S.-MANS. *loc. cit.* 35.

Turia FORSK. *Fl. æg.-arab.* 165.

[1] *Fevillieæ* B. H. *Gen.* i. 840, Trib. 8.—COGN. *Cucurb.* 937, Trib. 8.—*Nhandirobeæ* A. S.-H. *Mém. Mus.* xi. 216.—ENDL. *Gen.* 933, Ord. 201.—*Gomphogyneæ* B. H. *Gen.* iii. 820, 838, Trib. 5.—COGN. *Cucurb.* 918, Trib. 6.—*Gynostemmeæ* B. H. *Gen.* i. 839, Trib. 6.—COGN. *Cucurb.* 912, Trib. 5.—*Zanonieæ* BL. *Bijdr.* 936.—B. H. *Gen.* i. 839, Trib. 7.—COGN. *Cucurb.* 925, Trib. 7.

[2] *Sechineæ* SCHRAD. *Linnæa*, xii. 407.—*Sycioideæ* SCHRAD. *loc. cit.*—ENDL. *Gen.* 940. Subord. 3.—B. H. *Gen.* i. 837, Trib. 4.—COGN. *Cucurb.* 869, Trib. 4.

[3] *Abobreæ* NAUD. *Ann. sc. nat.* sér. 4, xvi. 198.—B. H. *Gen.* i. 819, Trib. 2.—COGN. *Cucurb.* 734, Trib. 2.

[4] *Cyclanthereæ* SCHRAD. *Linnæa*, xii. 48.—B. H. *Gen.* i. 819, 834, Trib. 2.—COGN. *Cucurb.* 797, Trib. 3.—*Elaterieæ* NAUD. *Ann. sc. nat.* sér. 5, vi. 30.—B. H. *Gen.* i. 835, Trib. 3.

[5] *Cucurbiteæ* SER. *DC. Prodr.* iii. 299 (part.).—ENDL. *Gen.* 935, Subord. 2 (part.).—*Cucumerineæ* NAUD. *op. cit.* sér. 4, xvi. 198 (part.).—B. H. *Gen.* i. 817, 820, Trib. 1 (part.).—COGN. *Cucurb.* 348, Trib. 1 (part.).

[6] ENDL. *Gen.* 936 (*Cucurbiteæ*), § 2).

[7] *Telfairieæ* ENDL. *Gen.* 935, Subord. 1.

Thus constituted, the family is generally remarkable for its organs of vegetation. Nearly always herbaceous or subshrubby, very rarely arborescent, generally annual or perennial, often pubescent or rough, the Cucurbitaceæ have constantly alternate leaves without stipules: either simple, and in this case less often entire, palmatilobed, partite or pedate; or compound digitate. All these parts usually abound in aqueous juices and are remarkable for the great development of their constituent vescicles, which frequently present peculiar characters.[1] The leaves are often accompanied by a simple, bifid or branched lateral tendril, which has given rise to all kinds of hypotheses, but which appears to us difficult to take for anything else than a contracted branch, simple or bearing normally one or more leaves reduced laterally, terminated by a hook, and here and there, abnormally, these same leaves with the addition of a limb more or less developed, and even a one- or few-flowered inflorescence. The flowers, normally unisexual, monœcious or diœcious, are, on the other hand, always hermaphrodite in *Schizopepon*; which is accidentally the case, here and there, in several other genera, and is explained by a more perfect evolution of the rudiments of the gynœcium found so often in the male flower or of the sterile stamens so frequently observed in the female. The floral receptacle is constantly concave, especially in the female flowers. where it envelops wholly or nearly so the inferior ovary. The calyx is almost always but little developed or nearly nil. The corolla is dialypetalous or not unfrequently gamopetalous, and the insertion is the same as that of the andrœcium. One cannot easily understand at the present time how there could have been so much discussion respecting the organization of the latter, the number of parts composing it, and, consequently, the number of anther cells. In some types, in this respect more perfect than others, as those belonging to the series Telfairieæ, this number is two; but in most genera, the anther is unilocular. The organogeny clearly demonstrates that each unilocular anther is primarily opposite a sepal; and that by horizontal contractions four of the anthers unite, more or less, in pairs, the fifth retaining its original position, that is alternipetalous.[1] The mode of placentation has also been the object of many theories; it has been supposed that in certain genera the lateral lobes of the placentas became reflexed and doubled over, and that the true partitions were destroyed. Nothing of the kind takes place;[2] the ovarian cells are incomplete or complete, and the placentas may thicken extremely in developing around the ovules they encase, uniting in the centre as is the case in so many other groups where the evolution is centripetal. The direction of the ovules has served to distinguish certain series in the family; but unfortunately the character is not always absolute in a given genus. The fruit is extremely variable, often fleshy, sometimes corticate, not unfrequently dehiscent. But the seeds have so far one constant character: they are without albumen.

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[1] Particularly. the punctuations or pierced plates. On the histology, see LOTHAR, *Essai sur l'anat. compar. des org. végét. et des téguments séminaux des Cucurbitacées* (Thèses de Lille, 1881). On the structure of the seminal envelopes, DUTAILLY, *Adansonia*, x. 207, fig. 8, 9. On the andrœcium, DUTAILLY, *Compt. rend. Assoc. franç.* (1884), 297. The unfortunate name of *talon* has been given to a lateral cortical process from the base of the young stem, produced at the time of germination, in some genera, often covered with hairs or papillæ and corresponding to a more or less considerable deviation of the vascular fascicles. There is no agreement as to the functions of this process (BALDINI, *Ann. Ist. bot. Roma* (1884), 49, t. 6–8), long known, and so far as we know, no one has interested himself in the case where it is double.

AFFINITIES.—The approximation of the Cucurbitaceæ and Campanulaceæ may surprise some persons who have been accustomed to see the former included in the Gamopetalous, and the latter in the Dialypetalous group. It must not be forgotten, however, that there are dialypetalous Campanuleæ (*Wahlenbergia*, *Phyteuma*, &c.), and that *Cucurbita* is gamopetalous; so that the flower is very similar to that of *Canarina*, especially when the latter becomes pentamerous.[3] Our cultivated Cucurbitaceæ have a fleshy fruit, which is rare in the Campanulaceæ; but we know that the fruit of *Canarina* is an edible berry. The insertion is the same in the two groups, owing to the identical form of the receptacle, and the mode of placentation is the same in both families. Still, it is in the organs of vegetation that the two groups appear most unlike. The herbaceous and climbing branches and tendrils of the Cucurbitaceæ give them a peculiar stamp. This character is often found among the Passifloraceæ, which are distinguished by their superior ovary, and the Aristolochiaceæ, in which the ovary is inferior, but the perianth single. We shall also see that the Loasaceæ are closely allied to the Cucurbitaceæ, *Gronovia* forming a link between the two groups; and we think that there is an equally close relationship between the Cucurbitaceæ and the Begoniaceæ.

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[1] See H. BN, *Compt. rend. Assoc. franç.* (1878), 676.

[2] See H. BN, *Bullet. Soc. Linn. Par.* (1885), 451, as also on the andrœcium and tendrils.

[3] As in fig. 150.

s.[1]—The aqueous juices with which the various organs of the Cucurbitaceæ are filled have very different properties:[2] sometimes insipid or tasty, saccharine, alimentary, sometimes extremely acrid, owing to the presence of oleo-resinous substances, bitter or evacuant, chrystallizable or not, which renders plants such as Colocynth and Bryony powerful or formidable medicines. In our common Bryony[3] (fig. 267–273), the subterranean portion, white, poisonous, caustic, is extremely irritating to the skin and mucous membrane. It is a powerful, dangerous purgative, prescribed chiefly in dropsical and various nervous affections. Freed from these irritant principles, this portion is rich in starch which has been turned to account and from which alcohol is distilled. The fruit of colocynth[4] (fig. 259–266) is a powerful drastic, extremely bitter, from which are prepared alcoholic and aqueous extracts and a powder much used as an evacuant. The fruit of *Ecballium Elaterium*[5] (fig. 274–282) has similar properties. A solidified extract (*elaterium*) is prepared from it, a violent purgative and hydragogue. In the warm regions of America, many Cucurbitaceæ have similar evacuant properties, and on this account have been made the subjects of special works.[1] Such are several species of *Wilbrandia*,[2] *Perianthopodus*[3] and *Fevillea*. The seeds of many species of the latter genus are famed medicines in Brazil and the Antilles, particularly those of *F. cordifolia*[4] (fig. 212–217), extolled as remedies for the bites of venomous serpents and poison of the virulent *Mancinella*, and those of *F. trilobata*[5] (fig. 207–211), used in various maladies. The embryo contains a large quantity of bitter and purgative oil, also used for clearing. In Madagascar, the embryo of *Delognœa Humblotii*[6] is the source of an abundant and useful oil. There is also much oil in the seeds of our gourds, especially in those of *Cucurbita Pepo*[7] (fig. 242–250), and of our cucumbers, as *Cucumis sativus*;[8] so that by bruising them emulsions, easily administered, can be made when recourse is had to these seeds as vermicides. Formerly the *four great cool seeds* were indiscriminately employed for this purpose, which are in reality the seeds of *Cucumis Melo*[9] and *sativus*, the water melon[10] and *Lagenaria vulgaris*.[11] We have only to mention the alimentary uses of the pericarp of the melon (fig. 252), water melon, cucumber (253,

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[1] ENDL. *Enchirid.* 492.—GUIB. *Drog. simpl.* éd. 7, iii. 255.—LINDL. *Veg. Kingd.* 313.—H. BN, *Tr. Bot. méd. phanér.* 1156.

[2] ENDLICHER has sought to explain this apparent contradiction: "there is the same virtue in most, differing only by innumerable degrees."

[3] *Bryonia dioica* JACQ. *Fl. austr.* ii. 59.—DC. *Fl. franç.* i. 603.—GREN. et GODR. *Fl. de Fr.* i. 603.—H. BN, *loc. cit.* 1164, fig. 3034–3040.—*B. alba* BULL., not L.—*B. ruderalis* SALISB.—*B. nitida* LINK.—*B. lutea* BAST.—*B. sicula* GUSS. *B. cretica* L., believed to be the Ἄμπελος λευκὴ (ἀγρία) of Dioscorides, has the same properties, though in Greece the young shoots are eaten.

[4] *Citrullus Colocynthis* SCHRAD. *Linnæa*, xii. 414.—SPACH, *Suit. à Buffon*, vi. 213.—BENTL. and TRIM. *Med. pl.* n. 114.—COGN. *Cucurb.* 510.—GUIB. *loc. cit.* iii. 259.—H. BN, *loc. cit.* 1161, fig. 3026–3033.—*Cucumis Colocynthis* L. *Spec.* 4011. — *C. Pseudo-Colocynthis* WENDER. — *C. bipinnatifidus* WIGHT.—*Colocynthis officinarum* SCHRAD. *loc. cit.* 421.

[5] A. RICH. *Dict. cl. Hist. nat.* vi. 19.—COGN. *Cucurb.* 467.—GUIB. *loc. cit.* 258.—H. BN, *loc. cit.* 1166, fig. 3041–3047.—*E. agreste* REICHB. —*E. officinarum* L.-C. RICH. — *E. officinale* NEES.—*E. purgans* SCHRAD.—*Momordica Elaterium* L. *Spec.* 1010.—*Elaterium cordifolium* MŒNCH.

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[1] Principally that of SILVA-MANSO (A. L.-P.), published at Rio-Janeiro in 1836 and entitled : *Enumeração das substancias brazileiras que podem promover a catarre.*

[2] *W. verticillata* COGN. *Cucurb.* 566 (*W. drastica* MART.—*W. scabra* MART.—*W. fluminensis* WAWR.—*Momordica verticillata* VELL.—*Anguria aculeata* SCHLCHTL) is a purgative and powerful hydragogue, treated of by S.-MANSO (*loc. cit.* 50) under the name of *W. Riedeli.*

[3] *P. diffusus* (*Bryonia diffusa* VELL.—*Cayaponia diffusa* S.-MANS. *loc. cit.* 32.—CORR. DE MELLO, *Journ. Linn. Soc.* xi. 256.—*C. pilosa* COGN. *Cucurb.* 750.—*Dermophylla elliptica* S.-MANS.) is a universal evacuant, administered in a number of nervous and chronic cutaneous affections, as an emmenagogue, &c. (*Abobrinka do Mato*, *Tayuyà Abobra*). *P. Tayuya* (*Bryonia Tayuya* VELL. — *Cayaponia Tayuya* COGN. *Cucurb.* 772), *Taioia* of MARCGRAFF, and *P. Martianus* (*Trianosperma ficifolia* MART.—*Momordica cordatifolia* GOD. TORR.—S.-MANS. *loc. cit.* 34) has very pronounced drastic properties (*Tayuya*, *Abobrinha do Mato* (fig. 235). Likewise *P. glandulosus* (*Bryonia glandulosa* PŒPP. et ENDL.—*Trianosperma glandulosa* MART.—*Cayaponia glandulosa* COGN. *Cucurb.* 755), and *argutus* (*Trianosperma arguta* MART. *Mat. med. Bras.* 80).

[4] L. *Spec.* 1013.—COGN. *Cucurb.* 941.—GUIB. *loc. cit.* 263.—H. BN, *loc. cit.* 1170, fig. 3051, 3052.—*F. scandens* L., var. *α*.—*F. trilobata* REICHB. (not L.).—*F. hederacea* POIR.—*F. punctata* POIR.—*F. Javilla* H. B. K.—*Trichosanthes punctata* L. — *Nhandiroba scandens*, &c., and *N. foliis trifidis* PLUM. (*Nhandirobe of the Antilles*).

[5] L. *Spec.* 1014. — COGN. *Cucurb.* 939. — H. BN, *loc. cit.* 1169, fig. 3049, 3050.—*F. scandens β* L.—*F. cordifolia* VELL. (not L.).—*F. Marcgravii* GUIB. *loc. cit.* 264, fig. 658. It is the *Ghandiroba* or *Nhandiroba* of MARCGRAFF, and *Hypanthera* of S.-MANSO (CORR. DE MELL. *loc. cit.* 257, 261).

[6] COGN. *Bull. Soc. Linn. Par.* 425.

[7] L. *Spec.* 1010.—COGN. *Cucurb.* 545.—GUIB. *loc. cit.* 262.—H. BN, *loc. cit.* 1158, fig. 3017–3025.—*C. Melopepo* L.—*C. verrucosa* L., &c.

[8] L. *Spec.* 1012.—COGN. *Cucurb.* 498.

[9] L. *Spec.* 1011.—COGN. *Cucurb.* 482 (*Melon*).

[10] *Citrullus vulgaris* SCHRAD. *Linnæa*, xii. 412.—COGN. *Cucurb.* 508 (*Melon d'eau*).

[11] SER. *Mém. Soc. Genève*, iii. p. i. 25, t. 2.—COGN. *Cucurb.* 417. It is the true *Gourde*, *Cucurbita Lagenaria* L.

254) and other species of the genus *Cucumis*.[1] The Cucurbitaceæ of secondary utility are: *Anguria* with edible fruit;[2] *Melothria*, purgative;[3] *Momordica*, alimentary, oleiferous or medicinal;[4] *Luffa*, some edible, others purgative;[5] *Trichosanthes*,[6] *Sicyos*[7] and the Chocho[8] (fig. 228–233), the fruits of which are alimentary in warm countries.[9] Cucurbitaceæ are rarely cultivated as ornamental plants; several of them, however, bear fruit remarkable for its form or coloration. *Telfairia*, *Fevillea* and *Trichosanthes* represent truly magnificent bindweeds in some European conservatories.

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[1] Particularly *C. Dudaim* L., *Chate* L., *farinosus* EHRENB., *Anguria* L. (fig. 255), *flexuosus* L., *utilissimus* ROXB., *Conomon* THUNB., *metulifera* (fig. 258), *prophetarum* L., &c. (see ROSENTH. *loc. cit.* 680). *C. Rheedii* KOSTEL. (*C. Pavel* KOSTEL ?), the fruit of which is edible, is a *Coccinia*, a genus here referred to *Cucurbita*, as also *Turia Moghadd* FORSK., the berry of which is eaten in Arabia.

[2] Principally *A. trifoliata* L. and *A. pedata* L. (fig. 302–304).

[3] Especially *M. indica* LOUR. (fig. 293–295) and *M. pendula* L., the fruit of which (*Cerejas de purga*) is a purgative for men and cattle. *M. heterophylla* COGN. (*Bryonia Rheedii* BL.) is employed in the treatment of rheumatism and abscesses; *M. punctata* COGN. (*Bryonia maderaspatana* BERG.—*B. scabra* THUNB.), in that of affections of the digestive canal, liver, dysentery, and even of cholera; *T. scrobiculata* COGN., of Abyssinia, as a vermicide (*Taffafala*).

[4] Particularly *M. Charantia* L. (*Papavel*, *Paperi*), a remedy for flux, catarrh, and the seed of which yields a cosmetic oil. It is used in Brazil, under the name of *M. papillosa* PECK., in rheumatism and a number of other affections (*Melao do Mato*, *M. de San-Caltano*). *M. Balsamina* L. (fig. 285, 286) has oleaginous seeds and fruits useful in some countries, as the *Poma hierosolymitana* and our *Pommes de merveille*. *M. dioica* ROXB. is extolled by Indian physicians as a remedy for tumours, hemorrhoids, &c.

[5] Among others *L. acutangula* SER. (fig. 283, 284), the root of which is hydragogic, evacuant, the fruit edible and the seeds oleaginous. *L. drastica* MART., used in Brazil against many chronic affections, is only a form. *L. operculata* COGN. (*Momordica operculata* L.—*Poppya operculata* KOCH), *Koosia* of Guiana, or *Buxa Paulista*, is also an energetic evacuant. *L. cylindrica* L. (*L. Petola* SER.—*L. ægyptiaca* MILL.—*Momordica cylindrica* L.—*M. Luffa* L.) is also a purgative, hydragogue, antiapoplectic. In this species, as in some others, the fruit, reduced by maceration or some other process to intricate fibro-vascular fascicles, serves as a sponge, and may be used in the manufacture of paper.

[6] *T. anguina* L. (*Cucumis anguinus* L.) is a purgative and helminthicide, and similar properties are found in *T. amara* L., *cucumerina* L., *incisa* ROTTB., *trifoliata* BL., *cuspidata* LAMK, *laciniosa* KLEIN, *palmata* ROXB., *villosa* BL. *T. nervifolia* L. has been extolled for epilepsy. The large seeds of *T. macrocarpa* BL. (*Hodgsonia heteroclita* HOOK. F. and THOMS.) are said to produce a great quantity of oil.

[7] *S. angulatus* L. has a bitter and diuretic root and seeds.

[8] *Sechium edule* SW. (see p. 385, not. 1).

[9] We may also mention *Benincasa cerifera* SAV., referred to the genus *Citrullus*, the fruit of which has a refreshing juice, used in fevers, and the seeds are emulsive; *Kedrostis rostrata* COGN. and *digitata* COGN., famed as antiasthmatic and purgative; *Corallocarpus epigæus* CLKE, used in India as antirheumatic, antisyphilitic, and sometimes substituted for the true *Colombo*. *Telfairia pedata* HOOK. (fig. 299–301) is bitter, tonic; the oil from its seeds has been compared to the best olive, and the plant is cultivated in Africa for that reason. *T. occidentalis* HOOK. F. (*Bot. Mag.* t. 6272) has equally oleaginous seeds.

GENERA.

I. FEVILLEÆ.

1. **Fevillea,** L.—Flowers diœcious; receptacle of males campanulate or subhemispherical. Sepals 5, inserted at margin, imbricate patent. Petals 5, alternate with sepals, unguiculate, with an inner longitudinal extension at the base, imbricate. Stamens 5, inserted in centre of receptacle alternipetalous; filaments subclavate recurved; anthers extrorse, unilocular, longitudinally 1-rimose. Perianth of female flower same as male; receptacle same above, produced below to a sac containing the adnate ovary. Staminodes often 5. Disk sometimes epigynous, consisting of very small glandules. Ovary quite or for the greatest part inferior, surmounted by a triple style reniformly 2-lobed at apex; cells 3, sometimes incomplete to apex. Ovules in cells 4–6, 2-seriate, descending; micropyle extrorsely superior. Fruit baccate corticate, zoned at margin above middle of receptacle and marked with three radiating lines. Seeds in cells 2–6, descending from top of placenta imbricate compressed; cotyledons of exalbuminous embryo large orbicular.—Climbing shrubs; leaves alternate angular, palmatilobed or sometimes (*Anisosperma*) 2-foliolate; 2 lateral folioles reduced to glandules; tendrils lateral to leaves, 2-fid at apex; flowers in more or less compound racemes in lateral axils; male inflorescences richer. (*Trop. America.*)—See p. 375.

2. **Alsomitra** Rœm.[1]—Flowers diœcious; receptacle of males cupular. Sepals 5, oblong. Petals 5, oblong erose, imbricate. Stamens 5; filaments short; anthers small, 1-locular.[2] Female

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[1] *Syn.* fasc. ii. 117 (part.).—Endl. *Gen.* n. 5122 b.—B. H. *Gen.* i. 840, n. 66.—Cogn. *Cucurb.* 928 (not Bl. *Bijdr.* 937).

[2] Pollen ovoid, 3-sulcate, 3-porous (Cogn.).

receptacle clavately cylindrical below enclosing adnate ovary, above bearing perianth similar to that of male flower. Styles 3 or more rarely 4, ovarian cells same in number, often incomplete, ∞-ovulate. Fruit subcylindrical or clavate, 3-valvate at broadly truncate apex. Seeds ∞, imbricate, bounded by a thin wing and oftener with tuberculate margins.—Climbing shrubs; leaves simple or oftener 3-foliolate or pedate; tendrils lateral, simple or 2-fid; flowers[1] in loose pendulous compound racemes; pedicels oftener very thin. (*Trop. Asia, Australia and America.*[2])

3. **Zanonia** L.[3]—Flowers diœcious; receptacle of males shortly cupular. Sepals 5, valvate, 2 or 4 more or less coalescent in pairs. Petals 5, coriaceous or fleshy, introflexed at narrowed apex and in bud. Stamens 5, alternipetalous, equal; filaments short thick free; anthers transversely oblong, 1-locular, transversely 1-rimose above.[4] Perianth of female flower as in male; receptacle long obconical or clavate below; styles 3, 2-fid at apex; cells of inferior ovary 3, 2-ovulate; ovules 2 or ∞, descending; micropyle superior and extrorsely lateral. Fruit cylindrical, clavate or subhemispherical, 3-valvate at broadly truncate apex. Seeds in cells 2–∞, descending compressed imbricate, girt with a narrow thick or sometimes broad membranous wing.—Climbing shrubs; leaves entire petiolate; tendrils simple or 2-fid; flowers[5] racemose; male inflorescences loosely compound pendulous; female simpler often few-flowered. (*Trop. Asia and Oceania.*[6])

4. **Gerrardanthus** Harv.[7]—Flowers diœcious (nearly of *Alsomitra*); sepals 5. Petals of rotate or broadly campanulate corolla 5, unequal, appendiculate at middle. Stamens 5, 4 furnished with a small 1-locular anther often coherent in pairs; the fifth imperfect.[8] Female receptacle clavate, enclosing adnate ovary.

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[1] White or greenish, small.

[2] Spec. 8, 9. Wall. *Pl. as. rar.* ii. 28, t. 133 (*Zanonica*).—F. Muell. *Fragm. Phyt. Austral.* vi. 188; vii. 61.—Cogn. *Mart. Fl. bras.* lxxviii. 416.—Clke, *Hook. Fl. brit. Ind.* ii. 634.—*Bot. Mag.* t. 6017.—Walp. *Rep.* ii. 194 (*A. brasiliensi* Cogn., scil. *Siolmatra*, see p. 417, not. 12).

[3] *Coroll.* 19; *Gen.* n. 1117.—Lamk, *Ill.* t. 816. —Ser. *DC. Prodr.* iii. 298.—Endl. *Gen.* n. 5122.—B. H. *Gen.* i. 839, n. 65.—H. Bn, *Compt. rend. Ass. fr.* (1878) t. 7, fig. 1, 2.—Spach, *Suit. à Buffon*, vi. 189.—Arn. *Hook. Journ. Bot.* iii. 272.—Cogn. *Cuc.* 925.

[4] Pollen as in *Alsomitra*.

[5] Ochrous, small or moderate.

[6] Spec. 2, 3. Wight and Arn. *Prodr.* i. 340. —Bl. *Bijdr.* 937.—Miq. *Fl. ind.-bat.* i. p. i. 682.—Rœm. *Syn.* fasc. ii. 117 (*Alsomitra*).—Wight, *Ill.* t. 103.—Clke, *Fl. brit. Ind.* ii. 633.

[7] *B. H. Gen.* i. 840; *S. Afric. pl.* ed. 2, 127. —Cogn. *Cucurb.* 936.

[8] Pollen quite of *Fevillea*.

Staminodes 5, alternipetalous. Styles 3, truncately 2-lobed at stigmatose apex. Placentas 3 parietal. Ovules in incomplete cells generally 2, descending; micropyle superior laterally extrorse.[1] Fruit elongate coriaceous, 3-valvate at truncate apex. Seeds few oblong, long alate at apex.—Climbing shrubs; tendrils 2-fid; male flowers[2] racemose; female solitary. (*Trop. and South. Africa.*[3])

5. **Gomphogyne** GRIFF.[4]—Flowers monœcious (nearly of *Zanonia*); calyx short. Petals 5, oblong, valvate. Stamens 5, central free; anthers subglobular, 1-locular, 1-rimose; spurious septum very prominent.[5] Receptacle of female flower subclavate or turbinate below; inferior adnate ovary conformed; styles 3, 2-fid. Ovules in cells oftener 3, descending. Fruit sub-3-angular-campanulate, crowned with 3 persistent styles, 3-valvate at truncate apex. Seeds 1-3, rather compressed, rugose, subdenticulate at margin, exalbuminous.—Feeble climbing plants; leaves pedate, 5-7-foliolate; tendrils simple or sometimes 2-fid; flowers[6] more or less compound racemose. (*E. India.*[7])

6. **Actinostemma** GRIFF.[8]—Flowers monœcious; receptacle of males cupular. Laciniæ of 5-partite calyx linear-lanceolate. Corolla subrotate; laciniæ linear lanceolate or ovate, oftener long caudate at apex. Stamens 5, alternating with petals; filaments free, equally or unequally distant;[9] anthers basifixed oblong extrorse, 1-locular, longitudinally 1-rimose.[10] Receptacle of female flower lageniform. Perianth as of male flower. Staminodes glandular 3-5, unequal or equal, inserted within base of perianth. Ovary adnate below within receptacle; 1-locular, free above and

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[1] Funicle thickened to apex.

[2] Green or fuscate, small.

[3] Spec. 3. NAUD. *Rev. hort.* (1868), 444; *Journ. Soc. hort. Par.* (1867), 598.

[4] *Pl. Cantor.* 26, not., t. 4.—ENDL. *Gen.* Suppl. v. 50.—B. H. *Gen.* i. 838, 1008, n. 61.—COGN. *Cucurb.* 923.—*Triceros* GRIFF. *Notul.* iv. 406.

[5] Pollen 3-sulcate, poricid.

[6] Small, greenish.

[7] Spec. 2. CLKE, *Fl. brit. Ind.* ii. 632.—WALL. *Plant. as. rar.* ii. 29 (*Zanonia ?*).—KURZ, *Journ. As. Soc. Bengal.* (1877), ii. 105.—*Syn.* fasc. ii. 118 (*Alsomitra*).—WALP. *Rep.* ii. 194 (*Zanonia*).

[8] *Pl. Cantor.* 24, t. 3; *Notul.* iv. 61.—ENDL. *Gen.* Suppl. v. 50.—B. H. *Gen.* i. 838, n. 62.—COGN. *Cucurb.* 918.—H. BN, *Compt. rend. Ass. fr.* (1878), 685, t. 7, fig. 3, 4.—*Microsicyos* MAXIM. *Prim. Fl. amur.* 112, t. 7; *Ann. sc. nat.* série 4, xiii. 95.—*Pomasterium* MIQ. *Ann. Mus. lugd.-bat.* ii. 80.

[9] Of which 4 more or less approximate in pairs.

[10] Pollen 3-sulcate, poricid (COGN.).

attenuated to style 2-lobed at apex. Ovules in cell 2–4, inserted below apex on parietal placenta, collaterally descending in pairs; micropyle extrorsely[1] superior. Fruit semi-superior, oftener echinate, annulate to middle and dehiscing operculately above. Seeds 1–4, compressed rugose, subdenticulate at margin exarate.—Slender climbing herbs; leaves entire or lobed cordately hastate; tendrils simple or oftener 2-fid; male flowers[2] simple- or compound-racemose; female solitary, racemose or lateral to base of male raceme. (*E. Asia.*[3])

7. **Gynostemma** Bl.[4]—Flowers diœcious or rarely monœcious (nearly of *Actinostemma*); receptacle of males saucer-shaped; petals oblong or pointed. Stamens 5, central; filaments connate at base, radiate above; anthers 1-locular, spuriously 2-lobed, 1-rimose.[5] Ovary of female flower inferior, free above, 2–3-locular; styles 2, 3, 2-fid at apex. Ovules in cells 2, descending, incompletely anatropous. Fruit globular, indehiscent, umbonate at apex; seeds 1–3, broadly ovoid, verrucose.—Perennial climbing herbs; branches slender; leaves simple or generally pedate; folioles 3–7; tendrils simple or oftener 2-fid; flowers[6] in highly compound terminal and axillar racemes; pedicels articulate. (*Trop. E. Asia, Java.*[7])

8. **Schizopepon** Maxim.[8]—Flowers hermaphrodite; receptacle ovoid-subglobose enclosing adnate ovary and dilated above in a cupule. Sepals 5, petals 5 valvate, inserted at margin of receptacle. Stamens 5, inserted with perianth, 3-adelphous (2-2-1); filaments short; anthers ellipsoid, 1-locular, extrorsely rimose. Ovary inferior, 3-celled; style branches 3, 2-lobed at apex. Ovules in cells 1, or very rarely 2, descending; micropyle introrsely superior or sometimes lateral. Fruit baccate; septa evanescent,

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[1] Finally often lateral.

[2] Small, whitish, articulate.

[3] Spec. 4. Wall. *Cat.* n. 6683 (*Sicyos*), 6742 (*Momordica*).—Naud. *Ann. sc. nat.* sér. 5, v. 39.—Fr. et Sav. *Enum. pl. jap.* i. 175.—Clke, *Fl. brit. Ind.* ii. 632.

[4] *Bijdr.* 23.—Endl. *Gen.* n. 4696.—B. H. *Gen.* i. 839, n. 63.—Cogn. *Cucurb.* 912.—*Pestalozzia* Zoll. *Mor. Verz.* 31.—Endl. *Gen.* Suppl. v. 50.—*Enkylia* Griff. *Pl. Cantor.* 26.—Endl. *Gen.* Suppl. v. 50.

[5] Pollen globose, 3-sulcate, poricid.

[6] Minute, whitish or greenish.

[7] Spec. 5. Wall. *Pl. as. rar.* ii. 28 (*Zanonia*).—Rœm. *Syn.* fasc. ii. 118 (*Alsomitra*).—Thw. *Enum. pl. Zeyl.* 124 (*Pestalozzia*).—Dcne, *Nouv. Ann. Mus.* iii. 450 (*Sicyos*).—Clke, *Fl. brit. Ind.* ii. 633.—Walp. *Rep.* ii. 194 (*Zanonia*); *Ann.* i. 316 (*Pestalozzia*).

[8] *Prim. Fl. amur.* 110, t. 6; *Ann. sc. nat.* sér. 4, xiii. 95.—B. H. *Gen.* i. 839, n. 64.—Cogn. *Cucurb.* 917.

1–3-spermous, finally 3-valvate at apex. Seeds 1 or few flat exalbuminous.—A climbing herb; leaves long petiolate cordately ovate, angularly 5–7-lobed; tendrils lateral, 2-fid; flowers[1] axillar solitary. (*Japan, Mandshuria.*[2])

II. SECHIEÆ.

9. **Sechium** P. Br.—Flowers monœcious; male receptacle cupular, with a 10-crenate or 10-lobed disk within. Sepals 5, inserted at margin of receptacle, imbricate. Petals 5, inserted with calyx, valvate. Stamens 5, inserted within receptacle, alternipetalous; filaments free; anthers 1-celled, flexuose, dehiscing extrorsely by flexuose clefts, four coadnate in pairs but free. Female perianth as male; receptacle contracted to a neck under cupule and dilated below to a lageniform sac enclosing adnate ovary. Staminodes 5, minute alternipetalous. Style erect, 3-lobed at top; lobes stigmatose flexuosely dilated, 2-lobulate. Ovule in single cell of ovary solitary descending anatropous; micropyle finally superior and introrse. Fruit large baccate, externally sulcate and rugose or echinate. Seed 1, descending compressed smooth; cotyledons of exalbuminous embryo large; radicle superior.—A climbing hispidulous shrub; leaves alternate cordate palmately angular or lobed; tendrils lateral, 3–5-fid; male flowers racemose; female solitary in same axil with male. (*Warm America.*)—See p. 383.

10. **Sicyos** L.[3]—Flowers monœcious; receptacle cupular or broadly campanulate; female, below contracted neck, dilated to a sac enclosing adnate ovary. Sepals 5, minute dentiform or subnil, inserted at margin of receptacle. Corolla subrotate or subcampanulate; petals 5, free, 3-angular, valvate, sometimes 2-cuspidate (*Sicyosperma*[4]). Stamens 5 (or fewer); filaments connate in an erect column; anthers alternipetalous extrorse capitate, suberect,

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[1] Small, white.

[2] Spec. 1. *S. bryoniæfolius* Maxim. *loc. cit.*

[3] *Gen.* n. 1094.—J. *Gen.* 349.—Endl. *Gen.* n. 5146.—Naud. *Ann. sc. nat.* sér. 4, xii. 165; sér. 5, vi. 20.—B. H. *Gen.* i. 837, n. 55.—Cogn. *Cucurb.* 869.—*Sicyoides* T. *Inst.* 103, t. 28.—*Badaroa* Bert. herb. n. 838 (ex Endl.).—*Micrampelis* Rafin. *Mod. Rep.* v. 531.

[4] A. Gray, *Pl. Wright. tex.* ii. (1863), 62.—Naud. *Ann. sc. nat.* sér. 4, xii. 162.—B. H. *Gen.* i. 837, n. 56.—Cogn. *Cucurb.* 899.

curved or flexuose, rimose at the middle, free or variously above or below connate in pairs.[1] Ovary inferior, 1-celled; style slender erect dilated at apex in 2, 3 stigmatose lobes, linear or oblong, patent or recurved; ovule 1, descending; micropyle superior. Fruit ovate, lenticular (*Sicyosperma*) or angular thick (*Sicyocarpa*[2]) or oftener thin compressed (*Eusicyos*) or sometimes fusiform (*Atractocarpos*[3]); seed 1, descending, exalbuminous.—Creeping or climbing herbs; tendrils 1-∞-fid; leaves alternate, subentire, angular or lobed; male flowers[4] in racemes sometimes corymbose; female solitary or grouped often in same axil as male, sometimes broadly bracteate. (*Warm America and Oceania.*[5])

11? **Microsechium** NAUD.[6]—Flowers, &c., of *Sechium*; calyx and corolla of males 4-merous; anthers 4,[7] free flexuose affixed to top of 4-fid column. Fruit baccate sparsely spinulous; seed descending immarginate.—Climbing herbs; rhizome tuberous perennial; leaves cordate, entire or generally 3–5-lobed; tendrils 3–6-fid; male flowers racemose;[8] female (3-merous) capitately umbellulate.[9] (*Mexico, Centr. America.*[10])

12. **Sechiopsis** NAUD.[11]—Flowers monœcious (nearly of *Sechium*); male receptacle 10-saccate at base. Sepals 5, dentiform. Corolla subrotate, valvate. Stamens 5; filaments coalite; anthers sigmoid flexuose, 3-adelphous (2-2-1), capitately approximate.[12] Female receptacle dilated above, 3-gonal; sepals 3, dentiform. Petals 3. Ovary, &c., of *Sechium*. Fruit samaroid 3-alate; seed 1, descending compressed smooth.—A Mexican climbing herb; leaves cordate, 3-lobed; tendrils unequally 4–5-fid; male flowers[13] racemose; pedicels verticillate; female flowers umbellate coaxillar with male. (*Mexico.*[14])

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[1] Concerning their evolution see H. BN, *Bull. Soc. Linn. Par.* 328.

[2] A. GRAY, *Proc. Amer. Acad.* iii. 51.—COGN. *Cucurb.* 895, sect. 3.

[3] COGN. *Mart. Fl. bras.* lxxviii. 108.

[4] Whitish, greenish or yellowish.

[5] Spec. about 30. H. B. K. *Nov. gen. et spec.* ii. 118.—PŒPP. et ENDL. *Nov. gen. et spec.* ii. 53.—TORR. *Fl. St. N.-York*, i. 249.—A. GRAY, *Unit. St. expl. Exped. Bot.* i. 648, t. 80–82.—COGN. *Mart. Fl. bras.* lxxviii. 105.—WALP. *Rep.* ii. 204; *Ann.* i. 317; iv. 866; 867 (*Sicyosperma*).

[6] *Ann. sc. nat.* sér. 5, vi. 25.—B. H. *Gen.* i. 838, n. 59.—COGN. *Cucurb.* 910.—*I* NAUD. *loc. cit.* 22.

[7] Pollen subglobose muriculate.

[8] Greenish white.

[9] Better perhaps a sect. of *Sicyos*.

[10] Spec. 2. MOÇ. et SESS. *Fl. mex. ined.* t. 355 (*Sicyos*).—SER. *DC. Prodr.* iii. 313 (*Sechium*).—PEYR. *Linnæa*, xxx. 56 (*Sicyos*).

[11] *Ann. sc. nat.* sér. 5, vi. 23.—B. H. *Gen.* i. 838, n. 60.—COGN. *Cucurb.* 908.

[12] Pollen globose smooth, thinly 10-sulcate.

[13] Small, greenish.

[14] Spec. 1. *S. triquetra* NAUD.—*Sicyos triqueter* MOÇ.—SER. *DC. Prodr.* iii. 309.

13. **Sicydium** SCHLCHTL.[1]—Flowers diœcious, 5-merous; petals 5, valvate. Stamens 5, 3-adelphous (2-2-1); anthers ellipsoid introrse; cell straight or curved, longitudinally rimose. Disk central. Female receptacle below contracted neck ovoid or lageniform and enclosing 1-celled ovary. Staminodes 5 (2-2-1) glandular or sometimes antheriferous. Disk epigynous fleshy. Ovule 1, anatropous, inserted under apex of cell, descending; micropyle below hilum introrsely superior. Style-branches 3, linear patulous entire. Fruit globose or compressed, baccate or fibrous. Seed descending globose or compressed rugose; cotyledons of exalbuminous embryo plano-convex.—Climbing herbs or shrubs; leaves entire cordate; tendrils 2-fid; flowers[2] compound racemose at ends of twigs; female sometimes solitary or few. (*Trop. America.*[3])

III. PERIANTHOPODEÆ.

14. **Perianthopodus** S. MANS.—Flowers monœcious or diœcious; male receptacle cupular or campanulate or tubular. Sepals 5, dentiform. Petals 5, inserted alternately with sepals at margin of receptacle, valvate or slightly induplicate. Stamens 5, 3-adelphous (2-2-1), inserted around bottom of receptacle; anthers longitudinally 2–3-plicate or replicate to apex, 1-celled, more or less coherent or free; connective not produced. Ovary rudimentary central, of various form, or 0. Female perianth and receptacle as male; cupule contracted below to a neck and under that dilated to an ovoid or oblong sac enclosing adnate ovary. Ovary inferior, 1–3-celled, crowned with an epigynous entire or 3-lobed disk and a style divided at apex into 3 stigmatose lobes more or less dilated reflexed or sometimes (*Abobra*) linear and radiate. Ovules in complete or incomplete cells 1 (*Arkezostis*) or 2–4, inserted at base or opposite, generally ascending; micropyle laterally inferior. Fruit baccate or suberose, 1–12-spermous; seeds more or less compressed exalbuminous, oftener ascending.—Climbing or rarely creeping

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a, viii. 388 (not A. GRAY).—ENDL. *Gen.* 936.—COGN. *Cucurb.* 902.—*Triceratia* A. RICH. *Fl. cub.* 298, t. 44 [2].—B. H. *Gen.* i, 838, n. 58.

[2] Whitish, minute.

[3] VELL. *Fl. flum.* x. t. 103 (*Fevillea*).—H. B. K. *Nov. gen. et spec.* vii. 175, t. 640 (*Fevillea*).—RŒM. *Synops. mon.* fasc. ii. 29.—COGN. *Mart. Fl. bras.* lxxviii. 111.—WALP. *Rep.* ii. 759.

herbs; rhizome perennial; leaves entire, 3–5-foliolate, palmately 3–7-lobed or more rarely (*Abobra*) dissected; tendrils oftener 2–5-fid; flowers small in simple or more or less compound or sometimes fascicled contracted racemes. (*Warm America, trop. west. Africa.*) —See p. 386.

15 ? **Selysia** Cogn.[1]—Flowers monœcious; male receptacle cupular. Sepals 5, small or dentiform. Petals 5, in a subcampanulate corolla. Stamens 5 (2-2-1); connective compressed suborbicular; anthers 1-celled unequally curved or sinuate, more or less replicate at apex. Ovary rudimentary very small or 0. Female flower unknown. Fruit baccate subglobular; seeds to 6, ascending, deltoid compressed smooth.—Climbing herbs; leaves entire or sublobed; tendrils simple or 2-fid; male flowers[2] solitary or fasciculate; female solitary coaxillar. (*Columbia, Peru.*[3])

16? **Dicælospermum** Clrke.[4]—" Flowers monœcious, female unknown. Male receptacle campanulate. Sepals 5, dentiform. Petals 5, ovately 3-angular. Stamens 5 (2-2-1); anthers straight 1-celled; connective scarcely produced at apex.[5] Ovary rudimentary glandular. Fruit dry depressed globose. Seeds 3, suberect, laterally much compressed and thickened at margin.—A slender climbing herb; leaves ovately cordate or hastate; tendrils simple; flowers[6] fasciculate." (*E. India.*[7])

IV? CYCLANTHEREÆ.

17. **Cyclanthera** Schrad.—Flowers monœcious; male receptacle cupular. Sepals 5, dentiform or filiform, sometimes very small. Petals 5, alternate, valvate. Stamens connate in a head; stem central short; anthers linear-conduplicate or dehiscing longitudinally, sometimes connate in a horizontal ring rimose around and bordering an orbicular connective. Rudimentary ovary 0.

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[1] *Cucurb.* 735.

[2] Whitish, rather large.

[3] Spec. 2. Pœpp. et Endl. *Nov. gen. et spec.* ii. 55, t. 174 (*Melothria*).—Rœm. *Synops. mon.* fasc. ii. 28.

[4] *Hook. Fl. brit. Ind.* ii. 630.—Cogn. *Cucurb.* 734.

[5] Pollen 3-sulcate, 3-porose.

[6] White, minute.

[7] Spec. 1. *D. Ritchiei* Clrke.

Female perianth as male; receptacle, under contracted neck, dilated to an oblique ovoid or lageniform rostrate sac enclosing adnate ovary. Cells of inferior ovary 3, complete or incomplete, of which 1, 2 sometimes vacuous or obsolete; ovules ∞, ascending; each often solitary in cellules formed by parietal or subaxile placenta; style short, broadly hemispherical at stigmatose apex. Fruit obliquely ovoid, reniform or gibbous, smooth or oftener spinose or echinose, finally dry, dehiscing elastically and exposing parietal or central and finally rising placenta. Seeds ∞, smooth or rough compressed, sometimes 2-cuspidate; embryo exalbuminous.—Annual herbs with perennial rhizome; branches climbing; leaves entire, lobed or pedatinerved; tendrils simple or 2-∞-fid; male flowers simple- or compound-racemose; female axillar solitary. (*Warm America.*)—See p. 388.

18? **Hanburia** Seem.[1]—Flowers (nearly of *Cyclanthera*) monoecious (large[2]); receptacle campanulate coloured. Sepals 5, 6, dentiform inserted with the same number of valvate petals at margin of receptacle. Stamens 1-adelphous; column central slender; anthers united in a subglobose capitule highly conduplicate, 1-celled, rimose.[3] Female perianth as male and receptacle under short neck dilated to a subglobose or ovoid echinate sac. Ovary inferior, 4–5-ovulate; ovules ascending and solitary in unequal placentary cells. Style columnar, broadly capitate at stigmatose apex. Fruit obliquely ovoid, long echinate, 1–5-locellate, finally elastically and irregularly opening exposing a pendulous placenta. Seeds few (1–5) large orbicular-compressed; cotyledons of thick fleshy embryo plano-convex.—A perennial climbing herb; leaves cordate simple; tendrils 3-fid; flowers racemose; female solitary lower.[4] (*Mexico.*[5])

19. **Elaterium** Jacq.[6]—Flowers monoecious; receptacle tubular cylindrical. Sepals 4, 5, small. Petals 4, 5, often narrow, valvate.

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[1] *Bonplandia*, vi. (1858), 293; vii. 2; x. 189, t. 12; *Ann. and Mag. Nat. Hist.* ser. 3, ix. 9; *Journ. Bot.* ii. 224.—B. H. *Gen.* i. 836, n. 53.—Cogn. *Cucurb.* 820.—*Nietoa* Schaffn. *La Nature*, iii.; 347, c. icon.

[2] Yellowish-white.

[3] Pollen globose, 5–6-sulcate, 5–6-porose.

[4] ? Rather an abnormal sect. of *Cyclanthera* ?

[5] Spec. 1. *H. mexicana* Seem.—*Nietoa mexicana* Schaffn.

[6] *Enum. pl. carib.* 31; *Sel. St. amer.* 241, t. 154.—Poir. *Dict.* iv. 417.—J. *Gen.* 394.—Ser. *DC. Prodr.* iii. 310.—Endl. *Gen.* n. 5141.—B. H. *Gen.* i. 835, n. 52.—Cogn. *Cucurb.* 858.—*Rhytidostylis* Hook. and Arn. *Beech. Voy. Bot.* 424, t. 97.

Anther head oblong or globose; cells each highly sigmoid-flexuose.[1] Ovary obliquely ovoid; cells 1–6, oftener 3, 1 vacuous; ovules in cells ∞, ascending, oblique or subhorizontal. Styles slender constricted under broadly capitate stigmatose apex. Fruit oblique gibbous, 1–2-celled or ∞-locellate, hispid or echinate, dehiscing elastically and exposing lateral or subcentric placenta. Seeds compressed, often crenulate at margin.—Perennial herbs; branches climbing; leaves entire, lobed or partite; tendrils simple or 2–3-fid; male flowers [2] racemose; female solitary, sometimes coaxillar. (*Warm America.*[3])

20. **Echinocystis** Torr. and Gr.[4]—Flowers monoecious; receptacle concave pateriform or campanulate, female below constricted neck dilated in a sac enclosing adnate ovary. Sepals 5, inserted at margin of receptacle, oftener small or minute, dentiform or filiform. Corolla subrotate inserted with calyx; petals 5 (or 6, 7) papillose, valvate or scarcely imbricate above. Stamens connate at base in a short erect column; anthers suberect or oftener connate in a flexuose crown, sinuately rimose to middle.[5] Staminodes in female flower 3–5, setiform or minutely glanduliform. Ovary 2-celled; placentas 2 parietal, finally contiguous within; each 2–6-ovulate; ovules ascending, finally more or less contorted, and enclosed by accrescent and locellate placenta; micropyle introrsely lateral.[6] Fruit baccate or finally dry, long echinate without, fibrous within, 1–4-locellate, dehiscing operculately or by 1–2 pores above (*Echinopepon* [7]), or sometimes irregularly lacerate (*Euechinocystis*); seeds 1–12, more or less elongate, smooth or sometimes marginate.—Climbing herbs, annual or with perennial tuberose root; leaves entire, lobed or oftener palmately 5–7-angular; tendrils generally 2–5-fid; male flowers [8] in simple or compound ramose racemes; female solitary or coaxillar with male. (*Temp. and warm N. and S. America.*[9])

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[1] Pollen subglobose, 3–4-sulcate.

[2] White or yellow, small.

[3] Spec. about 12. L. *Spec.* ed. 2, 1375.—W. *Spec.* iv. 192.—H. B. K. *Nov. gen. et spec.* ii. 120.—Hemsl. *Centr. Amer. Bot.* 488.—Walp. *Rep.* ii. 203; v. 762 (*Rhytidostylis*); *Ann.* i. 317; iv. 865.

[4] *Fl. N.-Amer.* i. 542.—Endl. *Gen.* Suppl. i. 1421.—B. H. *Gen.* i. 835, n. 51.—Cogn. *Cucurb.* 798.—*Hexameria* Torr. *Rep. pl. N.-York*, 137 (not R. Br.).—*Megarrhiza* Torr. *Pacif. Railw. Rep.* vi. 74.—*Marah* Kell. *Proc. Calif. Acad.* ed. 1, 38.

[5] Pollen smooth, 5–6-gonal, poricid.

[6] Concerning the tortion of the ovule see H. Bn, *Bull. Soc. Linn. Par.* 457.

[7] Naud. *Ann. sc. nat.* sér. 5, vi. 17.

[8] Whitish, small.

[9] Spec. about 22. Brew. et Wats. *Bot. Calif.* i. 240 (*Melothria*).—Vell. *Fl. flum.* 10, t. 94 (*Momordica*).—Benth. *Pl. Hartw.* 6 (*Elaterium*).—Michx, *Fl. bor.-amer.* ii. 217 (*Sicyos*).

V. CUCURBITEÆ.

21. **Cucurbita** L.—Flowers monœcious or diœcious; male receptacle campanulate, turbinate or sometimes cylindrical. Sepals 5, or rarely 4-8, inserted at margin of receptacle, sometimes (*Sicana*) refracted. Corolla gamopetalous campanulate, 5-lobed; prefloration induplicately quincuncial. Stamens 5, inserted at bottom of receptacle, 4 approximate or connate in pairs opposite petals; the fifth free alternipetalous; filaments free or (*Coccinea*) more or less connate; anthers linear sigmoid-flexuose, extrorsely 1-rimose, free (*Sicana*) or more or less agglutinate or coalite. Rudimentary ovary 0. Female perianth as male; receptacle dilated below neck to an ovoid, oblong or cylindrical sac enclosing adnate ovary. Staminodes various, sometimes confluent at base with epigynous disk. Style short or slender, 3-lobed or 3-partite (*Coccinea*) at stigmatose apex; lobes simple or obscurely (*Sicana*) or conspicuously 2-lobulate or 2-furcate. Ovules ∞, finally enclosed in cellules formed by 3 placentas thickened and closely contiguous or coadnate and finally accrete, subhorizontal anatropous. Fruit fleshy or fibrous or corticate, spherical, ovoid, oblong or cylindrical. Seeds ∞, oval compressed, oftener marginate, smooth or rarely scrobiculate.—Annual or perennial herbs; rhizome thick; branches creeping or climbing; leaves lobed or angular; tendrils simple or 2 ∞-fid; male flowers solitary, cymose or racemose; female solitary. (*All warm reg.*)—See p. 391.

22. **Schizocarpum** Schrad.[1]—Flowers monœcious (of *Cucurbita*); corolla 5-fid. Stamens 5 (2-2-1); anthers longitudinally 3-plicate.[2] Female disk epigynous 3-lobed. Ovary ovoid rostrate; style filiform, 3-lobed at stigmatose apex. Ovules ∞, enclosed in cellules of 3 accrescent placentas, horizontal. Fruit dry obliquely fenestrate,[3] dehiscing from the base in 3 valvules coherent at apex. Seeds ∞, broadly unequally oval complanate short, entire or

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[1] *Ind. sem. H. gœtt.* (1830); *Linnæa*, vi. *Litt. Ber.* 73; xii. 407.—Endl. *Gen.* n. 5144.—Cogn. *Cucurb.* 532.

[2] Pollen spherical, 3-porose, muriculate.

[3] The openings partly laying bare the seeds.

irregularly crenulate at margin.—Climbing annuals; leaves entire or 3-lobed cordate; tendrils 2-fid; flowers [1] axillar solitary. (*Mexico.*[2])

23. **Raphidiocystis** Hook. f.[3]—Flowers monœcious (nearly of *Cucurbita*); male receptacle campanulate. Sepals 5, pectinately pinnatifid. Corolla campanulate, 5-lobed to middle, induplicately subimbricate. Stamens 5, inserted at bottom of receptacle, 4 connate in pairs; the fifth elongate free; filaments free; anthers oblong coalite, longitudinally 3-plicate; connective narrow not produced beyond cells. Female perianth as male; receptacle below contraction produced in an oblong or subglobose sac externally hispid enclosing adnate ovary. Style columnar, girt at base with thin depressed disk, 3-branched above; branches erect, unequal 3–5-lobed stigmatose; placentas 3, locellately accrescent around numerous horizontal ovules. Fruit dry indehiscent, crowned with persistent perianth densely aculeately setose; seeds ∞, ovoid compressed, sometimes obtusely marginate.—Climbing herbs or shrubs, glabrous or variously clothed; leaves oval entire or short-lobed, cordate at base, pointed or acuminate at apex tomentose or hirsute; tendrils simple; flowers[4] axillar solitary or fasciculate, slenderly pedunculate. (*West. trop. Africa.*[5])

24. **Physedra** Hook. f.[6]—Flowers diœcious; male receptacle obconical. Sepals 5, dentiform. Corolla narrowly campanulate rather fleshy, 5-lobed, imbricate. Stamens 5, inserted in tube of receptacle; filaments very short; anthers 4 coadnate in pairs; the fifth free; cells sigmoid-2-plicate; connective not produced beyond cell. Female receptacle contracted above middle, globosely or oblong dilated below enclosing adnate ovary; placentas 3, parietal, ∞-ovulate, finally accrescent in cellules around each ovule; style columnar, thick capitate 3-lobed and richly papillose above.[7] Fruit[8] baccate ovoid or oblong; seeds ∞, ovoid or obovate compressed marginate smooth exalbuminous.—Herbs or shrubs, sometimes high climbing; leaves glabrous petiolate, generally

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[1] Yellow, rather large.

[2] Spec. 2. Cogn. *loc. cit.*

[3] *Gen.* i. 828, n. 25.—Cogn. *Cucurb.* 526.

[4] Rather large or moderate, yellow.

[5] Spec. 2. Hook. f. *Oliv. Fl. trop. Afr.* ii. 553.

[6] *Gen.* i. 827, n. 24.—Cogn. *Cucurb.* 523.—*Staphylosyce* Hook. f. *loc. cit.* 828, n. 26.

[7] Three staminodes very short and broader, sessile to the throat of the receptacle.

[8] Rather large, golden where known.

deeply palmately 5-7-lobed; tendrils lateral to axils, simple or 2-fid; flowers[1] in more or less compound spikes or racemes. (*West. trop. Africa.*[2])

25. **Calycophysum** KARST. and TRI.[3]—Flowers monœcious; calyx of males inflated globose; lobes 5, valvate. Corolla gamopetalous campanulate, subenclosed by calyx; lobes 5, valvate. Stamens 5, 3-adelphous (2-2-1); anthers 4 coadnate in pairs; cell 1, sigmoid-flexuose, extrorsely rimose; connective thick.[4] Perianth of female flower nearly as of male; calyx campanulate. Staminodes 3;[5] anthers sterile striate. Ovary inferior; style subinfundibular 3-lobed; lobes 2-lobulate subpetaloid reflexed. Placentas 3, ∞-ovulate; ovules horizontal. Berry corticate ellipsoid; seeds ∞, ovately 3-angular, sinuate at margin.—Perennial hispidulous climbing herbs; leaves entire or palmatilobed cordate; tendrils 3 5-fid; flowers[6] axillar solitary; peduncle of males articulate below apex. (*Columbia.*[7])

26. **Cionosicyos** GRISEB.[8]—Flowers monœcious; calyx of males infundibular or turbinate; lobes 5, ovate or oblong-lanceolate, finally remote. Corolla rotate; petals 5, obovate. Stamens 5 (2-2-1); anthers longitudinally 3-plicate connivent in an oblong capitule.[9] Female perianth as male; ovary inferior; style foliaceously 3-lobed at thickened apex; lobes reflexed. Placentas 3, ∞-ovulate; ovules horizontal. Fruit[10] ovoid fleshy.—A glabrous climbing herb; leaves oval, entire or 3-lobed, subcordate at base; tendrils simple; flowers[11] solitary or aggregate. (*Jamaica.*[12])

27? **Dieudonnæa** COGN.[13]—"Flowers diœcious; male receptacle urceolate; sepals 5, elongate. Petals 5, linear-3-angular erect, with 2-seriate squamules at base. Stamens 2, sessile dorsifixed in receptacle; anthers subpeltate, 2-celled; cells flexuose-gyrose,[1] bordering dilated connective. Female flowers . . . ?—A climbing shrub, suddenly leafless at base and there floriferous; branches leaved; leaves 2-lobed; tendrils simple; flowers[2] diœcious; males racemose crowded, bracteate." (*Peru.*[3])

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[1] Moderate, yellow.

[2] Spec. 3. G. DON, *Syst.* iii. 41 (*Cucurbita*).—HOOK. F. *Oliv. Fl. trop. Afr.* ii. 552; 554 (*Staphylosyce*).

[3] *Linnæa*, xxviii. 427.—NAUD. *Ann. sc. nat.* sér. 4, xviii. 184, t. 9.—B. H. *Gen.* i. 828, n. 27.—COGN. *Cucurb.* 520.

[4] Pollen globose muricate, 3-porous.

[5] Disc (?) thin exterior to staminodes.

[6] Yellowish-white, large

[7] Spec. 2. COGN. *Bull. Acad. Belg.* sér. 2, xlix. 191.

[8] *Fl. brit. W. Ind.* 288 (*Cionosycis*).—B. H. *Gen.* i. 826, n. 21.—COGN. *Cucurb.* 516.

[9] Pollen ovoid muricate, 3-sulcate, 3-porous.

[10] Size of *Aurantium*, yellowish.

[11] Yellow, large.

[12] Spec. 1. *C. pomiformis* GRISEB.—*Trichosanthes pomiformis* MACFAD. *Fl. jam.* ii. 143 (ined.), ex COGN.

[13] *Bull. Soc. bot. Belg.* xiv. 239; *Diagn.* ii. 18; *Cucurb.* 519.

28. **Cucumeropsis** NAUD.[4]—Flowers monœcious; male receptacle campanulate. Sepals 5, inserted at margin of receptacle subulately dentiform. Petals 5, inserted with sepals, obtuse at apex, imbricate? Stamens 5, inserted at middle of receptacular tube, 4 connate in pairs; the fifth free; anthers subsessile dorsifixed linear, incurved above;[5] connective not produced. Rudiments of gynœcium 1–3, glanduliform or subulate. Female perianth as male; receptacle produced below to an ovoid or subclavate sac enclosing adnate ovary; style very short presently obcordately 3-lobed; ovules in 3 locellately accrete placentas ∞, horizontal. Staminodes few, 3 or 0. Fruit[6] ellipsoid or cylindrically subclavate baccate; seeds ∞, ovate compressed smooth immarginate.—Climbing annuals, with habit of *Cucurbita*; leaves palmatilobed or sometimes entire; tendrils simple; male flowers[7] in compound subumbellate cymes; female solitary pedunculate laterally axillar with male inflorescences. (*West. trop. Africa.*[8])

29. **Dimorphochlamys** HOOK. F.[9]—Flowers diœcious; male receptacle broadly and shortly sac-like, externally vertically broadly 2-alate. Sepals 5, at back externally carinate or alate; wings 2 decurrent in receptacle.[10] Corolla campanulate; lobes 5, obtuse, imbricate. Stamens 5, inserted within receptacle; filaments free;[11] anthers 4 coadnate in pairs; cells longitudinally conduplicate; fifth free; connective shortly produced beyond cells, obtuse.

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[1] Or rather (?) 4 one-celled anthers, connate in pairs.

[2] Rather large.

[3] Spec. 1. *D. rhizantha* COGN.—*Anguria rhizantha* PŒPP. et ENDL. *Nov. gen. et spec.* ii. 52, t. 171.—SCHLCHTL, *Linnæa*, xxiv. 728, 768.—*A. Pœppigiana* SCHLCHTL, *loc. cit.* 769.

[4] *Ann. sc. nat.* sér. 5, v. 30.—COGN. *Cucurb.* 517.—*Cladosicyos* HOOK. F. *Oliv. Fl. trop. Afr.* ii. 534

[5] Not sigmoid-flexuose; a genus hence connecting the true *Cucurbiteæ* with the orthandrous or curvantherous genera.

[6] Large or moderate, edible.

[7] Small, yellow.

[8] Spec. 2. COGN. *loc. cit.*

[9] *Gen.* 827, n. 22; *Hook. Icon.* t. 1322.—COGN. *Cucurb.* 514.

[10] Rather large, yellow?

[11] Slender and glabrous.

Female receptacle below constricted neck produced in an ovoid sac enclosing adnate ovary and externally exalate. Ovules ∞, subhorizontal inserted on three placentas. Style columnar; branches 3 stigmatose, broadly peltate, 2-lobed. Fruit globose corticate crowned with persistent calyx; seeds ∞, compressed, 3-fid at apex, externally corrugate.—A climbing shrub; leaves alternate petiolate, ovate or cordate, dentate; tendrils entire or 2-fid; male flowers[2] cymose; peduncle multibracteate to apex; pedicels broadly 2-alate; female solitary? (*West. trop. Africa.*[1])

30. **Cucumis** T.[2]—Flowers (nearly of *Cucurbita*) monœcious or diœcious; male receptacle obconical or campanulate. Sepals 5, subulate, not contiguous, inserted at margin of receptacle. Corolla polypetalous or more or less deeply gamopetalous; folioles 5, induplicate. Stamens 5, 4 connate in pairs; the fifth free alternipetalous; filaments short; anthers oblong extrorse; cells flexuose sigmoid, curved or rarely erect, longitudinally or flexuosely rimose;[3] top of connective variously produced beyond cells in a papillose or fimbriate appendage. Ovary rudimentary inserted at bottom of receptacle glanduliform, depressed or shortly cylindrical. Female receptacle below much constricted neck produced in a sac enclosing spherical or oblong or cylindrical ovary; perianth as male. Staminodes 5, 4 connate in pairs. Ovary 3-5-placentiferous; placentas cuneiform; ovules ∞, subhorizontal. Style short cylindrical, girt at base with variable epigynous disk, above stigmatose 3-5-lobed; lobes ovoid or subspherical obtuse, oftener connivent. Fruit baccate, more or less thickly corticate, form and clothing various; seeds ovate or oblong compressed, short not or narrowly marginate.—An annual or perennial herb; humifuse or climbing, scabrous or hispid; leaves alternate angular, digitately 5-7-lobed or sometimes dissected; tendrils simple; flowers[4] lateral to axils, solitary or shortly racemose. (*All warm reg.*[5])

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[1] Spec. 1. *D. Mannii* Hook. f. *Oliv. Fl. trop. Afr.* ii. 550.

[2] *Inst.* 104.—L. *Gen.* n. 1092.—J. *Gen.* 395.—Ser. *DC. Prodr.* iii. 299.—Spach, *Suit. à Buffon*, vi. 205.—Endl. *Gen.* n. 5137.—Naud. *Ann. sc. nat.* sér. 4, xi. 9; xii. 108.—B. H. *Gen.* i. 826, n. 18.—Cogn. *Cucurb.* 479.—*Melo* T. *Inst.* 104.—*Rigocarpus* Neck. *Elem.* i. 238.

[3] Pollen dry ovoid, 3-sulcate, 3-porous.

[4] Yellow, moderate or small.

[5] Spec. about 25. Lour. *Fl. cochinch.* 591.—Wight et Arn. *Prodr.* i. 341.—Arn. *Hook. Journ. Bot.* iii. 278.—Wight, *Icon.* t. 496, 497.—Harv. and Sond. *Fl. cap.* ii. 494.—Boiss.

31. **Citrullus** Neck.[1]—Flowers monœcious (nearly of *Cucumis*); male receptacle cupular or broadly campanulate. Sepals 5, narrow rather remote, entire or sometimes (*Benincasa*[2]) broader more or less serrulate or reflexed. Petals imbricate. Stamens 5, 4 connate in pairs; anthers sigmoid-flexuose extrorse;[3] connective not produced beyond cells. Ovary rudimentary glanduliform depressed or subnil. Female receptacle below constricted neck dilated in a globose, ovoid or oblong sac enclosing adnate ovary. Stamens rudimentary 5, 4 connate in pairs, anantherous or bearing a sterile or sometimes polliniferous anther. Style thick; branches 3, dilated at stigmatose apex reniform or ovately sub-2-lobed; placentas 3, ∞-ovulate, &c., of *Cucumis*.—Annual or perennial herbs, oftener creeping, glabrous or variously clothed; tendrils 2-3-fid, rarely spinescent; flowers[4] axillar, solitary or more rarely few. (*Warm Africa and Asia.*[5])

32. **Bryonia** T.[6]—Flowers monœcious or diœcious;[7] male receptacle broadly campanulate. Sepals 5, inserted at margin of receptacle, dentiform sometimes very small. Petals 5, inserted with calyx, 3-angular, imbricate. Stamens 5,[8] inserted lower on the receptacle, 4 approximate in pairs; the fifth solitary alternipetalous; filaments short; cells of ovate anthers sigmoidly flexuose, extrorse, flexuose-rimose; connective not produced.[9] Rudimentary ovary 0. Female receptacle much constricted below cupule and lower dilated to a globose or more rarely ovoid sac enclosing adnate ovary; perianth as male. Staminodes 5, 4 approximate in pairs, sometimes very pilose, here and there developed and bearing a thick and sometimes polliniferous anther. Style slender erect, stigmatose 3-lobed above; lobes more or less deeply 2-lobulate;

Fl. or. ii. 758.—Clke, *Fl. brit. Ind.* ii. 619.—Cogn. *Mart. Fl. bras.* lxxviii. 15, t. 2.—Torr. et Gr. *Fl. N.-Amer.* i. 543.—DC. *Fl. fr.* iii. 690.

[1] *Elem.* i. 240.—Spach, *Suit. à Buffon*, vi. 212.—Endl. *Gen.* n. 5131.—Naud. *Ann. sc. nat.* sér. 4, xii. 99.—B. H. *Gen.* i. 826, n. 19.—Cogn. *Cucurb.* 507.—*Colocynthis* T. *Inst.* 107.

[2] Savi, *Bibl. ital.* ix. 158.—Ser. *DC. Prodr.* iii. 303.—Endl. *Gen.* n. 5135.—B. H. *Gen.* i. 824, n. 14.—Cogn. *Cucurb.* 512.

[3] Pollen 3- ∞-porous.

[4] Yellow, large or rather so.

[5] Spec. 4. Wight, *Icon.* t. 498 (*Cucumis*).—Rœm. *Syn.* ii. 49.—Ser. *Mém. Soc. Gen.* iii. p. i. t. 4 (*Benincasa*).—Cogn. *Mart. Fl. bras.* lxxviii. 18.—Hook. f. *Oliv. Fl. trop. Afr.* ii. 532 (*Benincasa*), 548.—Webb, *Phyt. canar.* ii. 3.

[6] *Inst.* 102, t. 28.—L. *Gen.* n. 1093.—J. *Gen.* 394.—Spach, *Suit. à Buffon*, vi. 225.—Endl. *Gen.* n. 5130.—B. H. *Gen.* i. 829, n. 31.—Cogn. *Cucurb.* 469.

[7] Occasionally polygamous; for the staminodes of the female flower are sometimes fertile.

[8] Concerning the evolution of the andrœcium see H. Bn, *Adansonia*, i. 130.

[9] Pollen ovoid, 3-sulcate, 3-porous.

placentas 3, parietal, contiguous within; ovules ∞, horizontal. Fruit baccate oftener globose, indehiscent or sometimes separating from the peduncle and emitting seeds from a basal aperture. Seeds ovate compressed, sometimes marginate, short or thinly scrobiculate.—Annual or perennial herbs; root sometimes thick; branches herbaceous climbing, often scaberulous; leaves angular or digitately 3-5-lobed; tendrils simple or 2-fid; flowers[1] solitary or oftener few racemose; males sometimes coaxillar with females; racemes stipitate (*Eubryonia*) or more rarely (*Bryonopsis*[2]) epedunculate fasciculiform. (*Europe, temp. and south. Asia, Oceania.*[3])

33. **Ecballium** A. Rich.[4]—Flowers monœcious; male receptacle short campanulate, continuous at margin with 5 linear-lanceolate sepals and 5 petals connate at base acute nervose imbricate. Stamens 5, 4 connate in pairs; the fifth free alternipetalous; filaments short erect; anthers unequally sigmoidly flexuose, linear-rimose at margin;[5] connective not produced. Female receptacle below much constricted neck produced in an oblong sac enclosing inferior ovary; perianth as male. Staminodes 5 short, 4 connate in pairs. Style erect thin, presently dilated in 3 2-furcate and recurved-subulate stigmatose branches. Ovary oblong; placentas 3 parietal, 3-angular within, contiguous, ∞-ovulate. Ovules horizontal (of *Cucurbita*). Fruit oblong hispid-echinate, very juicy, when mature separating from top of articulate peduncle and elastically projecting seeds with juice from basal aperture. Seeds ∞, oblong compressed short or narrowly marginate, crowned at apex with short duplex aril of hilum and micropyle.—A perennial or annual herb creeping, fleshy, everywhere hispid-pilose; leaves alternate, long petiolate, cordate obtuse, without tendrils; flowers[6] lateral to axils; the female sometimes at the same axil with the male raceme, sometimes springing separately from twigs. (*Medit.*

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[1] Yellowish, greenish or dirty white.

[2] Arn. *Hook. Journ. Bot.* iii. 274.—Endl. *Gen.* Suppl. ii. 76.—Naud. *Ann. sc. nat.* sér. 4, xviii. 193.—Cogn. *Cucurb.* 477.—*Dyplocyclos* (*Bryoniae* sect.) Endl. *Prodr. Fl. norfolk.* 68.

[3] Spec. 8, 9.—Reichb. *Ic. Fl. germ.* t. 1620, 1621.—Webb, *Phyt. canar.* t. 37.—Wight, *Icon.* t. 500.—Naud. *Fl. serr.* xii. t. 1202 (*Bryonopsis*).—Gren. et Godr. *Fl. de Fr.* i. 693.

[4] *Dict. class. Hist. nat.* vi. 19.—Spach, *Suit. à Buffon*, vi. 215.—Endl. *Gen.* n. 5132.—B. H. *Gen.* i. 826, n. 20.—Cogn. *Cucurb.* 467.—*Elaterium* Riv. *Rupp. Fl. jen.* 47 (not L.).—Adans. *Fam. des pl.* ii. 139.

[5] Pollen oblong, 3-sulcate, 3-porous.

[6] Yellow, moderate.

[7] Spec. 1. *E. Elaterium* A. Rich.—*E. agreste* Reichb.—*Momordica Elaterium* L.—*Elaterium cordifolium* Mœnch, *Meth.* 563.

34. **Luffa** T.[1]—Flowers monœcious; male receptacle cupular, campanulate or obconical, cavity glandular. Sepals 5, inserted at margin, 3-angular or linear-lanceolate, valvate. Petals 5, inserted with calyx, entire or eroded at apex, imbricate. Stamens 5, inserted below perianth, either subfree and alternipetalous, or 4 more or less connate in pairs; anthers very sigmoid-flexuose; cell bordering dilated connective; either free, or more or less approximate in pairs.[2] Ovary at bottom of receptacle rudimentary depressed glanduliform or 0. Female receptacle contracted under cupule and produced below in a tube enclosing adnate ovary; perianth as male. Staminodes 5, either subequidistant, or oftener approximate or connate in pairs. Ovary inferior cylindrical, angular or sulcately winged; branches of columnar style 3, thick 2-lobed at stigmatose apex. Ovules on thick placentas ∞, subhorizontal piriform. Fruit finally dry, oblong or cylindrical, terete or costate or subalate, smooth or echinate, terminated by style and dehiscing operculately; pericarp very fibrous within; cells 3, ∞-spermous. Seeds oblong, oftener compressed, exalbuminous.—Annuals; indumentum short scabrous; leaves subentire or generally 5–7-lobed; tendrils 2–∞-fid; male flowers[3] racemose; female solitary, sometimes inserted at bottom of male raceme.[4] (*All warm reg.*[5])

35. **Momordica** T.[6]—Flowers monœcious or diœcious; male receptacle cupular or shortly campanulate, variously glandulose within and enclosed by 2, 3, larger scales decurrent from the petals straight or incurved; sometimes some smaller scales interposed decurrent from stamens. Glandules 1–3 also on wall of receptacle. Calyx of 5 folioles, ovate or lanceolate, imbricate or finally sub-

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[1] *Act. Acad. par.* (1706), 84, t. 6.—ADANS. *Fam. des pl.* ii. 138.—CAV. *Icon.* i. 7, t. 9, 10.—DC. *Prodr.* iii. 302.—ENDL. *Gen.* n. 5134.—PAYER, *Fam. nat.* 120.—NAUD. *Ann. sc. nat.* sér. 4, xii. 118.—B. H. *Gen.* i. 828, n. 11.—COGN. *Cucurb.* 455.—*Petola* RUMPH. *Herb. amboin.* v. 405.—*Trevouxia* SCOP. *Introd.* 152.—*Amordica* NECK. *Elem.* i. 241.—*Poppya* RŒM. *Synops.* 59.—*Turia* RŒM. *loc. cit.*

[2] Pollen 3-sulcate, 3-porous.

[3] Yellow or sometimes white, oftener rather large.

[4] Concerning the glanduliferous scales of the inflorescence see DUTAILLY, *Bull. Soc. Linn. Par.* 41.

[5] Spec. 6. WIGHT, *Icon.* t. 499; *Ill.* t. 105.—MIQ. *Fl. ind.-bat.* i. p. i. 665.—CLKE, *Fl. brit. Ind.* ii. 614.—HARV. and SOND. *Fl. cap.* ii. 530.—BENTH. *Fl. Austral.* iii. 316.—HOOK. F. *Fl. trop. Afr.* ii. 530.—COGN. *Mart. Fl. bras.* lxxviii. 9, t. 1.—*Bot. Mag.* t. 1638.—WALP. *Rep.* ii. 200; *Ann.* iv. 863.

[6] *Inst.* 103, t. 29, 30.—L. *Gen.* n. 1090.—SER. *DC. Prodr.* iii. 311.—SPACH, *Suit. à Buffon*, vi. 229.—ENDL. *Gen.* n. 5133.—B. H. *Gen.* i. 825, n. 16.—COGN. *Cucurb.* 427.—*Muricia* LOUR. *Fl. cochinch.* 596.—*Neurosperma* RAFIN. *Journ. phys.* n. 89, 121.—*Zucca* COMMERS., ex J. *Gen.*, 308.

valvate or not contiguous. Corolla subrotate or broadly campanulate; petals 5, free or connate at base, subsimilar or dissimilar, imbricate. Stamens 5, subequidistant, or 4 approximate or connate at base in pairs; the fifth alternipetalous; filaments short, free entirely or only above; anthers free or variously coherent, straight, curved or diversely flexuose, marginally rimose;[1] connective below anther more or less dilated or compressed and often papillose or glandular. Ovary rudimentary short glanduliform or 0. Female receptacle below constricted neck produced in a tubular or lageniform sac enclosing inferior ovary; decurrent scales shorter than in male. Staminodes 5, 4 oftener approximate in pairs, or all free. Ovary fusiform or oblong cylindrical, 3-placentiferous; placentas in inner angle contiguous or free above; ovules ∞-, subhorizontal (of *Cucurbita*) or more rarely few (*Raphanistrocarpus*[2]) ascending and descending, sometimes 2 (*Raphanocarpus*[3]), the upper descending, the lower ascending. Style erect; branches 2, 3, subsimple or 2-lobed stigmatose at dilated apex. Fruit oblong, cylindrical sometimes subconstricted (*Raphanistrocarpus*) between seeds or fusiform, glabrous or variously verrucose, indehiscent, fleshy or nearly dry, often 3-valvate. Seeds 2-∞, flattened subcylindrical or turgid, short or rugose at apex, papillose, sometimes variously curved or sublobate; embryo fleshy exalbuminous.—Annual herbs or with perennial rhizome, creeping or oftener climbing; leaves entire lobed or pedate, 3-7-fid; tendrils simple or 2-fid; male flowers[4] solitary or sometimes 2, 3-nate and sometimes raised to the top of the petiole; female solitary or rarely 2-nis. (*East. trop. cont. and ins. Africa, trop. reg. of both worlds.*[5])

36. **Acanthosicyos** Welw.[6]—Flowers diœcious (?); male receptacle obconically cupular. Sepals 5, unequal coriaceous, hardened at apex. Petals alternate 5, ovate entire coriaceous. Stamens 5, inserted at mouth of receptacle, 4 connate in pairs; the fifth free; anthers linear very flexuose exserted; connective

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[1] Pollen 3-sulcate, 3-porous.

[2] H. Bn, *Bull. Soc. Linn. Par.* 309.

[3] Hook. f. *Icon. pl.* t. 1084.—Cogn. *Cucurb.* 426.

[4] Yellow or rarely white, rather large or small.

[5] Spec. 27. Wight, *Icon.* t. 504–506.—A. Rich. *Fl. abyss.* t. 53.—Harv. and Sond. *Fl. cap.* ii. 491.—Naud. *Ann. sc. nat.* sér. 5, v. 20.—Hook. f. *Oliv. Fl. trop. Afr.* ii. 534, 540 (*Raphanocarpus*).—Benth. *Fl. Austral.* iii. 318.—*Bot. Reg.* t. 980.—*Bot. Mag.* t. 2455, 5145.—Walp. *Rep.* ii. 200; *Ann.* ii. 615.

[6] *B. H. Gen.* i. 824; *Trans. Linn. Soc.* xxvii. t. 11, 11-A.—Cogn. *Cucurb.* 418.—H. Bn, *Bull. Soc. Linn. Par.* 422.

broad not produced. Female flower nearly of *Cucumis*; perianth as male. Staminodes 5, 4 approximate in pairs. Style columnar, 3-lobed stigmatose at apex; lobes 2-horned. Ovary ovoid. Ovules of *Cucurbita*. Fruit subglobose corticate verrucose; seeds ∞, oblong smooth not marginate exalbuminous.—A rigid much branched shrub;[1] cotyledons thick-foliaceous; other leaves abortive scale-like; spines to divaricate branches and twigs 2-nate;[2] male flowers[3] axillar subglomerate; female apparently solitary. (*West. trop. and subtrop. Africa.*[4])

37? **Edmondia** Cogn.[5]—Flowers diœcious; male receptacle campanulate. Calyx gamosepalous; lobes 5, lanceolate, saccate at base. Gamopetalous corolla thick pubescent; lobes 5, acute, imbricate. Stamens 5, 3 adelphous (2-2-1); anthers thick linear 3-plicate, approximate in globose mass.[6] Female perianth as male. Staminodes 5, 4 connate in pairs. Ovary oblong; placentas 3; ovules ∞, horizontal; style columnar, dilated 3-lobed at apex. Fruit corticate; seeds irregularly oblong, pointed at base, rounded at apex, immarginate.—A climbing herb; leaves ovate, 5-angular or sub-3-lobed; tendrils 3-6-fid; flowers[7] solitary, long pedunculate.[8] (*Venezuela.*[9])

38. **Lagenaria** Ser.[10]—Flowers monœcious or diœcious; male receptacle campanulate or infundibular. Sepals 5, narrow remote. Petals 5, free or connate at base, oblong or obovate nervose induplicately involute and quincuncially imbricate, finally patent. Stamens 5, 4 connate in pairs free or more or less coherent; the fifth alternipetalous; filaments straight free; anthers unequally oblong or ovate; connective broad unequal or sometimes elongate; anther cells sigmoid-flexuose or variously contortuplicate, contiguous or separate. Ovary rudimentary glanduliform, often 3-lobed. Female receptacle below constricted neck dilated to an ovoid, piriform or cylindrical sac enclosing ovary; perianth as

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[1] Habit of *Ulex*.

[2] Pulvinate.

[3] "Moderate, yellowish tomentose."

[4] Spec. 1. *A. horrida* Welw.—Hook. f. *Oliv. Fl. trop. Afr.* ii. 531.

[5] *Cucurb.* 420.

[6] Pollen muricate, 3-porous. Receptacle in cupular centre is taken for a pistillode.

[7] White, large.

[8] Affinity with *Calycophysum* manifest.

[9] Spec. 1. *E. spectabilis* Cogn.

[10] *Mém. Soc. Genève*, iii. p. i. 25, t. 2; *DC. Prodr.* iii. 299.—Spach, *Suit. à Buffon*, vi. 194.—Endl. *Gen.* n. 5136.—B. H. *Gen.* i. 823, n. 10.—Cogn. *Cucurb.* 417.—*Cucurbita* T. *Inst.* 107 (not L.).

male. Staminodes 5, 4 approximate in pairs. Ovary inferior various in form; placentas 3 and ovules of *Cucurbita*; lobes of short thick style stigmatose broad thick, subentire or 2-lobed. Fruit baccate corticate; seeds ∞, obovate oftener compressed marginate, sometimes truncate at apex.—Annual or perennial herbs, sometimes shrubs, climbing, generally soft-pubescent; leaves suborbiculate, cordate or variously lobed; petiole often 2-glandular at apex; tendrils simple or oftener 2-fid; flowers[1] solitary or males racemose.[2] (*Trop. Africa and Australia, South.*

39. **Peponia** Naud.[4]—Flowers monœcious (nearly of *Lagenaria*); male receptacle subcylindrical or obconical. Sepals 5, subulate or lanceolate. Petals 5, obovate. Stamens 5 (2-2-1); anthers coherent in an elongate capitule, longitudinally 3-plicate.[5] Rudiment of ovary glanduliform. Female perianth as male; receptacle below neck dilated to an oblong sac. Ovary inferior; placentas 3, ∞-ovulate; style columnar, stigmatose 3-lobed at apex. Fruit ovoid or long conical; seeds ∞, compressed smooth or marginate. —Climbing or creeping herbs; leaves entire or oftener dentate or lobed; tendrils simple or oftener 2-fid; male flowers[6] solitary or racemose; female solitary. (*Trop. Africa and Australia.*[7])

40. **Herpetospermum** Wall.[8]—Flowers diœcious; male receptacle tubular infundibular above. Teeth of calyx 5, linear-elongate. Petals of campanulate[9] corolla 5, inserted with calyx at margin of receptacle. Stamens 5, inserted at tube of receptacle; anthers 4

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[1] White, large, sometimes odorous.

[2] Sections of the genus appear to us: *Sphærosicyos* (Hook. f. *Gen.* i. 824, n. 13.—Cogn. flowers diœcious: male racemose; stamens approximate in a sphere; style 3-lobed at stigmatose apex; fruit subglobular, stem perennial; leaves lobed; tendrils simple —*Adenopus* (Benth. *Niger Fl.* 372; *Gen.* i. 825, n. 9.—Cogn. *Cucurb.* 411): flowers diœcious; male racemose; anthers approximate in a cone; lobes of style large; fruit globular; stem herbaceous or shrubby; leaves 3–7-lobed; tendrils simple or 2-fid. (*Trop. Africa.*)

[3] Spec. about 6. Wight, *Ill.* t. 105.—Harv. and Sond. *Fl. cap.* ii. 490 (*Luffa*).—Hook. f. *Oliv. Fl. trop. Afr.* ii. 527 (*Adenopus*), 529; 532 (*Sphærosicyos*).—Clke, *Hook. f. Fl. brit. Ind.* ii. 613.—Harv. *Thes. cap.* ii. t. 183.—Walp. *Ann.* ii. 647 (*Adenopus*).

[4] *Ann.* *nat.* sér. 5, v. 29, t. 3, 4.—B. H. *Gen.* i. 82 n. 8.—Cogn. *Cucurb.* 405.

[5] Pollen smooth, 3-porous.

tish or yellow, rather large.

[7] Spec. 6, 7. Hook. f. *Oliv. Fl. trop. Afric.* ii, 526.—Harv. and Sond. *Fl. cap.* ii. 490 (*Luffa*).

[8] *Cat.* n. 6761.—B. H. *Gen.* i. 834, n. 48.—Cogn. *Cucurb.* 404.—*Rampinia* Clke, *Journ. Linn. Soc.* xv. 129.

[9] "Divided nearly to base." (Cogn.)

coadnate in pairs ; cells longitudinally 2–3-plicate ; the fifth free unsymmetrical. Ovary sterile subulate inserted at bottom of rather thick receptacle erect. Female perianth as male ; receptacle dilated below to an oblong sac enclosing inferior adnate ovary ; ovarian cells 3, 4–6-ovulate ; ovules descending ; branches of slender style 3, stigmatose, oblong, 2-fid. " Fruit broadly oblong, long-attenuate at base, 3-gonal, irregularly sinuate-costate, 3-valved nearly to base ; seeds descending compressed emarginate." A climbing herb ; leaves alternate petiolate, ovate entire or lobed ; tendrils 2-fid ; male flowers[1] racemose or solitary ; female solitary. (*Himalaya.*[2])

41. **Biswarea** Cogn.[3]—Flowers (nearly of *Herp*
diœcious ; male receptacle lageniform. Teeth of calyx 5, linear. Corolla broadly campanulate ; petals induplicate. Anthers connate (2-2-1), longitudinally 2–3-plicate.[4] Seed rudimentary subulate or truncate at apex. Female perianth as male. Ovary inferior oblong ; ovules ∞, horizontal. Fruit oblong, 6-costate fibrous, 3-valvate nearly to base ; seeds ∞, compressed smooth. Other characters of *Herpetospermum*.—A climbing herb ; leaves lobed ; tendrils 2-fid ; male flowers[5] solitary or racemose ; female solitary. (*Himalaya.*[6])

42. **Gymnopetalum** Arn.[7]—Flowers monœcious or diœcious (of *Biswarea*); male receptacle sometimes ventricose above. Anthers coalite longitudinally conduplicate;[8] connective bare at apex or more rarely (*Trochomeria*[9]) papillose to apex. Rudiments of gynœcium 1–3, conical or linear. Ovary ovoid or oblong ; ovules horizontal ; style divided into 3 linear branches (*Eugymnopetalum*) or dilated-3-lobed (*Trochomeria*). Fruit indehiscent. Other characters of

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[1] Rather large, yellow.

[2] Spec. 1. *H. pedunculosum.*—*H. caudigerum* Wall.—Clke, *Hook. f. Fl. brit. Ind.* ii. 613.—*Rampinia herpetospermoides* Clke.—*Bryonia ? pedunculosa* Ser. *DC. Prodr.* iii. 306.—Rœm. *Syn.* fasc. ii. 36.

[3] *Bull. Soc. bot. Belg.* xxi. p. ii. 16.—*Warea* Clke, *Journ. Linn. Soc.* xv. 127, fig. 1–8.—Cogn. *Cucurb.* 402 (not Nutt.).

[4] Pollen 3-sulcate, 3-porous.

[5] Yellow, rather large.

[6] Spec. 1. *B. tonglensis* Cogn.—*Warea tonglensis* Clke, *loc. cit.* ; *Hook. f. Fl. brit. Ind.* ii. 612.

[7] *Hook. Journ. Bot.* iii. 278.—B. H. *Gen.* i. 822, n. 5.—Cogn. *Cucurb.* 387.—*Tripodanthera* Rœm. *Syn.* ii. 11, 48.—*Scotanthus* Naud. *Ann. sc. nat.* sér. 4, xvi. 172, t. 3.—B. H. *Gen.* i. 822, n. 4.

[8] Not transversely flexuose. Pollen smooth, 3-sulcate, 3-porous.

[9] B. H. *Gen.* i. 822, n. 6.—Cogn. *Cucurb.* 394.—*Heterosicyos* Welw., ex B. H., *Gen.* i. 822, n. 7.

Biswarea.—Slender herbs, climbing, creeping or sometimes erect;[1] root often tuberous; leaves entire, angular, lobed or partite; tendrils simple or sometimes 0; male flowers[2] solitary or racemose; female solitary. (*Trop. Asia, Java, trop. Africa and Australia.*[3])

43. **Eureiandra** Hook. f.[4]—Flowers diœcious; male receptacle funnel-shaped. Sepals 5, linear lanceolate. Petals 5, obovate. Stamens 5 (2-2-1); anthers flexuose linear.[5] Ovary rudimentary glanduliform or 0. Female perianth as male. Staminodes barbate at base. Ovary inferior cylindrical or oblong; ovules ∞, horizontal; style columnar, cordately 3-lobed at stigmatiferous apex. Berry ovoid or fusiform; seeds subglobose smooth.—Climbing herbs, oftener tomentose; leaves palmately 3-6-lobed; tendrils simple; male flowers[6] solitary or fasciculate; female solitary. (*Trop. Africa.*[7])

44? **Cogniauxia** H. Bn.[8]—Flowers diœcious (nearly of *Eureiandra*); male receptacle tubular, glandulose within at base. Sepals 5, dentiform. Petals 5, oblong-lanceolate unsymmetrical, imbricate. Stamens 5 (2-2-1); anthers very contortuplicate. Female flowers . . . ?—Climbing; leaves cordate-hastate, pedatinerved at base; tendrils simple; male flowers[9] racemose; raceme longer than leaf, bare at base; floral bracts raised to middle of pedicel linear. (*Gaboon.*[10])

45. **Trichosanthes** L.[11]—Flowers monœcious or diœcious; male receptacle tubular, below perianth more or less cupularly or campanulately dilated, sometimes variously glandulose within.[12] Calyx

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[1] Often turning black when dry.

[2] White, yellow or purplish.

[3] Spec. about 15. Miq. *Fl. ind.-bat.* i. p. i. 679.—Clke, *Fl. brit. Ind.* ii. 611.—Hook. f. *Oliv. Fl. trop. Afr.* ii. 524 (*Trochomeria*), 526 (*Heterosicyos*).—Walp. *Rep.* ii. 203.

[4] *Gen.* i. 825, n. 15.—Cogn. *Cucurb.* 415.

[5] Pollen 3-sulcate, 3-porous.

[6] Yellow, large or rather so.

[7] Spec. 2. Hook. f. *Oliv. Fl. trop. Afr.* ii. 533.

[8] *Bull. Soc. Linn. Par.* (1884), 423.

[9] Yellow, rather large.

[10] Spec. 1. *C. podolæna* H. Bn.

[11] *Gen.* n. 1089.—Adans. *Fam. des pl.* ii. 139.—J. *Gen.* 396.—Ser. *DC. Prodr.* iii. 313.—Arn. *Hook. Journ. Bot.* iii. 277.—Endl. *Gen.* n. 5140.—Spach, *Suit. à Buffon*, vi. 192.—Naud. *Ann. sc. nat.* sér. 4, xviii. 188.—B. H. *Gen.* i. 821, n. 3.—Cogn. *Cucurb.* 351.—*Anguina* Michel. *Nov. gen.* 12, t. 9.—*Poppya* Rumph. *Herb. amboin.* v. 414.—*Cucumeroides* Gærtn. *Fruct.* ii. 485.—*Involucraria* Ser. *Mém. Genève*, iii. p. i. 25, t. 5; *Prodr.* iii. 318.—*Eopepon* Naud. *Ann. sc. nat.* sér. 5, v. 31.—*Platygonia* Naud. *loc. cit.* 33.

[12] (?) If ovary rudimentary. In *Hodgsonia* it is more developed and filiform-3-lobed.

inserted at margin of receptacle; folioles entire, dentate or more or less glanduliferous induplicate and imbricate. Petals 5, inserted with calyx, ovate, obcuneate or lanceolate, long fimbriate; fringes often incurved or involute; or sometimes (*Hodgsonia*[1]) cirrhose; tendrils long and twisted; prefloration induplicately imbricate. Stamens 5, 4 approximate in pairs, inserted in throat of receptacle; filaments short or very short; anthers 1-celled sigmoidly flexuose, extrorse; connective not or very slightly produced.[2] Ovary rudimentary glanduliform or 0. Female receptacle as male; tube produced below to a globose, ovoid or fusiform sac enclosing adnate ovary. Perianth as male. Staminodes 0, or sometimes small inserted within receptacular tube.[3] Ovary inferior; placentas 3; ovules horizontal or descending, oftener ∞, or sometimes (*Hodgsonia*) subdefinite (12–15). Fruit baccate, globose, ovoid or fusiform, sometimes (*Hodgsonia*) large, 12-sulcate; seeds various oblong, ovoid, angular or globose, free, contiguous or coherent; internal integument thin or thick.—Herbs or climbing shrubs; leaves entire, lobed or sometimes 3–7-foliolate; tendrils simple or often 2–5-fid; male flowers[4] racemose; female solitary sometimes at base of male raceme, but rarely racemose. (*S.E. Asia, trop. Oceania.*[5])

46? **Delognæa** COGN.[6]—Flowers monœcious (nearly of *Trichosanthes*); male receptacle tubular very long campanulately dilated below perianth. Petals 5, thinly ciliate. Stamens 5, sessile; anthers linear longitudinally replicate.[7] Female flower . . .? Fruit piriform corticose. Seeds ∞, large transversely ovoid oblong smooth exalbuminous.[8]—A climbing herb; leaves 3-foliolate; tendrils 2-fid; male flowers shortly racemose. (*Madagascar.*[9])

47. **Thladiantha** BGE.[10]—Flowers diœcious; male receptacle cupular or shortly campanulate, cavity glandular excentric enlarged

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[1] HOOK. F. and THOMS. *Proc. Linn. Soc.* (1853).—HOOK. F. *Ill. pl. himal.* t. 1-3; *Gen.* i. 820, n. 1.—COGN. *Cucurb.* 348.

[2] Pollen unarmed, 3–4-porous.

[3] Sometimes fertile (H. BN, *Bull. Soc. Linn. Par.* 308).

[4] Whitish, large or rather so.

[5] Spec. about 40. ROXB. *Fl. ind.* iii. 701.—W. and ARN. *Prodr.* i. 349.—MIQ. *Fl. ind.-bat.* i p. i. 674.—BENTH. *Fl. Austral.* iii. 314.—CLKE, *Hook. f. Fl. brit. Ind.* ii. 606.—*Bot. Reg.* (1846), t. 18.—*Bot. Mag.* t. 722.—WALP. *Rep.* ii. 202; *Ann.* ii. 647; iv. 865.

[6] *Bull. Soc. Linn. Par.* 425.

[7] Pollen unarmed, 3-sulcate.

[8] Embryo richly oleaginous.

[9] Spec. 1. *D. Humblotii* COGN.

[10] *Enum. pl. chin. bor.* 29; *Mém. sav. étr. Pétersb.* ii. 103.—ENDL. *Gen.* n. 5151.—NAUD. *Ann. sc. nat.* sér. 4, xii. 150; sér. 5, vi. 11.—B. H. *Gen.* i. 825.—COGN. *Cucurb.* 421.—DUTAILLY, *Bull. Soc. Linn. Par.* 73.

anteriorly,[1] and bearing at its margin a subhorizontal incurved scale covering a glandule. Sepals 5, equal or subequal, inserted at margin of receptacle, imbricate, sometimes shortly revolute above. Stamens 5, inserted with corolla, unequal; the posterior smaller free; the 4 anterior (2 a little longer) approximate in pairs; filaments free recurved; anthers extrorse, 1-celled, rimose, straight or slightly curved.[2] Female receptacle dilated below throat to an oblong sac enclosing adnate ovary. Perianth as male.[3] Staminodes 5, 4 approximate in pairs free; anthers small sterile, longitudinally sulcate. Style branches 3, dilated oblong, subsagittate or 2-lobed at stigmatose apex. Ovules on 3 parietal placentas not contiguous above ∞, subhorizontal. Berry oblong; seeds ∞, obovoid compressed smooth not marginate.—Climbing herbs; stem tuberiform perennial; aerial branches climbing; tendrils entire or 2-fid; leaves alternate cordate, like nearly the whole plant oftener villose, entire or more rarely 3-partite; flowers[4] solitary, lateral to leaves, or males racemiform or capitately cymose, often densely bracteate. (*S.E. Asia, Java.*[5])

VI. MELOTHRIEÆ.

48. **Melothria** L.—Flowers monœcious or diœcious, sometimes hermaphrodite; male receptacle campanulate or cupular. Sepals 5, dentiform; petals 5, entire, inserted at margin of receptacle. Stamens 6 or generally 5 (2-2-1); anthers free or slightly coherent, straight or slightly curved, oblong or suborbicular; connective not or sometimes produced beyond anthers. Rudiment of gynœcium spherical or annular, entire or sometimes 3-lobed. Female perianth as male; receptacle below constricted neck dilated to a globose, ovoid or fusiform sac enclosing inferior adnate ovary. Staminodes 3-6 (sometimes antheriferous), or 0. Style girt at base with annular disk, linear 2–3-lobed at stigmatose apex.

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[1] According to some a rudimentary ovary.

[2] Pollen 3-sulcate, poricid.

[3] Calyx often much reflexed.

[4] Yellow, rather large.

[5] Spec. 4, 5. WALL. *Cat.* n. 6740 (*Momordica*).—BL. *Bijdr.* 929 (*Luffa*).—MIQ. *Fl. ind.-bat.* i. p. i. 666 (*Luffa*), 678 (*Trichosanthes*), 680 (*Gymnopetalum*).—CLKE, *Journ. Linn. Soc.* xv. 126; *Fl. brit. Ind.* ii. 630.—*Bot. Mag.* t. 5469.—WALP. *Rep.* ii. 205; v. 763.

Placentas 2, 3, ∞-ovulate; ovules horizontal. Fruit baccate various in form (few), 1–∞-spermous; seeds exalbuminous ovoid or oblong, tumid or compressed, smooth or scrobiculate, marginate. —Slender annual or perennial herbs, climbing or creeping; leaves entire or lobed; tendrils simple or rarely 2-fid, sometimes 0. Male flowers (small) racemose, corymbose, fasciculate or solitary; female solitary or subcorymbose. (*All warm reg.*)—See p. 410.

49. **Wilbrandia** S.-Mans.[1]—Flowers monœcious or more rarely diœcious, 5-merous; male receptacle tubular or narrowly obconical. Sepals 5, sub-3-angular; petals 5 subequal subconformed alternate, valvate, inserted in throat of receptacle. Stamens 5, inserted in tube of receptacle, 4 approximate in pairs; the fifth free; anthers subsessile dorsifixed oblong; sometimes conglutinate in a tube, longitudinally rimose; bottom of receptacular tube oftener glandulose more or less thickened.[2] Female perianth as male; receptacle produced below in an ovoid or oblong sac enclosing adnate ovary. Staminodes minute or 0. Ovary inferior, 2–3-placentiferous; placentas ∞-ovulate, finally accrescent and locellate around ∞ horizontal ovules; style girt at base by cupular epigynous disk, and divided above into 2, 3, subsimple or 2-fid branches. Fruit ovoid sometimes rostrate or costate; seeds ∞, compressed marginate.—Herbs often climbing; rhizome perennial; leaves digiti-3–5-nerved or sagittate, sometimes rugose; tendrils simple; male flowers[3] spicate or racemose; female solitary or few, fasciculate or glomerate. (*Brazil.*[4])

50. **Oreosyce** Hook. f.[5]—"Flowers monœcious; receptacle cylindrico-campanulate hispid. Sepals 5, dentiform subulate. Petals oblong 6, obtuse. Stamens 5 (2-2-1); anthers oblong linear straight (small) slightly coherent. Pistillode glanduliform. Female perianth as male. Ovary fusiform scabrous; style columnar, subcapitately 3-lobed at apex; disk annular. Ovules ∞,

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[1] *Enum. subst. cat. Bras.* 30.—Endl. *Gen.* Suppl. iii. 91.—Naud. *Ann. sc. nat.* sér. 4, xvi. 184, t. 13.—B. H. *Gen.* i. 831, n. 35.—Cogn. *Cucurb.* 565.

[2] Pollen smooth, 3-sulcate, 3-porous.

[3] White, small.

[4] Spec. 6. Vell. *Fl. flum.* x. t. 96 (*Momordica*).—Rœm. *Synops.* fasc. ii. 55, 67.—Schlchtl, *Linnæa*, xxiv. 748, 750, 753 (*Anguria*).—Griseb. *Pl. Lorentz.* 145.—Wawr. *Œst. Bot. Zeitschr.* (1863) 109; *Reis. Maxim.* 55, t. 51.

[5] *Oliv. Fl. trop. Afr.* ii. 548.—Cogn. *Cucurb.* 564.

horizontal. Fruit . . . ?—A very slender hispid climbing herb; leaves long petiolate, obscurely 3–5-lobed; tendrils simple; male flowers[1] solitary or 2–3-nis; female solitary." (*Trop. Africa.*[2])

51. **Apodanthera** Arn.[3]—Flowers monœcious or diœcious (nearly of *Ecballium* or *Cucumis*); male receptacle cylindrical or funnel-shaped. Sepals and petals 5. Stamens 5 (2-2-1 or 2-1-1-1); anthers linear straight or curved, sometimes short suborbicular. Rudimentary ovary small glanduliform or 0. Staminodes of female flower 3–5, linear or glanduliform. Ovary oblong or ovoid; style erect, 3-lobed at stigmatose apex. Ovules ∞, horizontal. Fruit fleshy; seeds smooth compressed.—Perennial herbs; branches creeping or climbing; indumentum pubiform or hispid; leaves entire or lobed; tendrils simple, 2–3-fid or 0; male flowers[4] racemose; female solitary. (*Warm. N. and S. America.*[5])

52? **Dactyliandra** Hook. f.[6]—Flowers monœcious; male receptacle campanulate. Sepals 5, subulate. Corolla 5-lobed above middle. Stamens 5 (2-2-1); anthers hippocrepiform, 1-celled.[7] Pistillode (?) depressed glanduliform. Ovary of female flower oblong; placentas 3; style columnar, subcapitate at apex, 3-lobed; ovules ∞, horizontal. Fruit globose; seeds ∞, or few rather compressed, truncate corrugate on both sides.—A slender climbing (?) herb; leaves digiti-5–7-lobed; tendrils simple; male flowers[8] "subumbellate"; female not coaxillar solitary.[9] (*Trop.*

53. **Blastania** Kotsch. and Peyr.[11]—Flowers monœcious; male receptacle shortly campanulate. Sepals 5, inserted at margin, subulate. Petals 5, imbricate. Stamens 5, 2 or oftener 4 co-

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[1] Yellow, small.

[2] Spec. 1. *O. africana* Hook. f.

[3] *Hook. Journ. Bot.* iii. 274.—Endl. *Gen.* Suppl. ii. 77.—B. H. *Gen.* i. 834, n. 46.—Cogn. *Cucurb.* 553.

[4] Whitish or yellow, small or rather large.

[5] Spec. about 12. Schlchtl. *Linnæa*, xxiv. 718, 755 (*Anguria*).—Cogn. *Mart. Fl. bras.* lxxviii. 35.—Walp. *Rep.* v. 761; *Ann.* iv. 865.

[6] *Oliv. Fl. trop. Afr.* ii. 557.—Cogn. *Cucurb.* 626.

[7] Pollen 3-sulcate, 3-porous.

[8] Whitish, minute.

[9] Sect. of *Bryonia*, ex B. H. *Gen.* i. 829.

[10] Spec. 1. *D. Welwitschii* Hook. f.

[11] *Pl. Tin.* 15.—Cogn. *Cucurb.* 627.—*Ctenopsis* Hook. f. ex Naud. *Ann. sc. nat.* sér. 5, vi. 12 (not de Nots).—*Ctenolepis* Hook. f. *Gen.* i. 832, n. 40.

herent in pairs; the fifth alternipetalous free; filaments inserted within receptacle, anthers short ellipsoid or ovoid straight, extrorsely rimose. Female perianth as male; receptacle below cupule dilated to a subglobular or short ovoid sac enclosing adnate ovary. Placentas 2, 3, each bearing one subhorizontal ovule. Staminodes short 3, 4, inserted around short epigynous disk or 0. Style columnar short, 2–3-lobed at very short dilated stigmatose apex. Fruit subglobose or depressed at apex subnavicular and broader than long, slightly fleshy, 1–3-spermous; seeds ovoid horizontal exalbuminous, sometimes depressed or marginate.—Climbing or creeping scabrellous annuals; leaves palmati-3–5-lobed or partite; axils stipuliform bracteate; tendrils simple; male flowers[1] racemose; female solitary stipitate in same axil. (*Trop. Asia and Africa.*[2])

54? **Muellerargia** COGN.[3]—"Flowers monœcious; male receptacle campanulate. Sepals 5, 3-angular. Corolla rotate, 5-partite. Stamens 5, 4 approximate in pairs; connective rather broad not produced; anthers linear, replicate above. Ovary of female flower inferior; style slender; branches 2 stigmatiferous, linear, obscurely 2-lobed; placentas 2; ovules ∞, horizontal. Fruit ovoid rostrate suboblique densely and softly muricate rather fleshy indehiscent. Seeds ∞, oblong compressed smooth immarginate.—A slender climbing herb; leaves ovate angularly 3–5-lobed; tendrils simple; bracts axillar to leaves stipuliform reniform or suborbicular entire; male flowers (minute) racemose; female solitary in same axil with males." (*Timor.*[4])

55. **Pisosperma** SOND.[5]—Flowers monœcious; male receptacle lageniform. Sepals 5, linear. Petals 5, elongate, imbricate. Stamens 5 (2-2-1) inserted below perianth; filaments very short; anthers coalescent, 1-celled, nearly straight, extrorse;[6] connective not or scarcely produced. Rudimentary ovary glanduliform or 0.

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[1] Small or minute.

[2] Spec. 2. LOUR. *Fl. coch.* 594 (*Bryonia*).—STOCKS, *Hook. Kew Journ.* iv. 149 (*Zehneria*).—WIGHT, *Ann. and Mag. Nat. Hist.* viii. 268 (*Pilogyne*).—CLKE, *Hook. Fl. brit. Ind.* ii. 629 (*Ctenolepis*).—HARV. *Thes. cap.* i. t. 96.

COGN. *Cucurb.* 630.

[4] Spec. 1. *M. timorensis* COGN., unknown to us.

[5] *Fl. cap.* ii. 498.—HARV. *Gen. S. afric. pl.* ed. 2, 126.—B. H. *Gen.* i. 831, n. 38.—COGN. *Cucurb.* 631.

[6] Pollen oblong, 3-sulcate, 3-porous.

Female perianth as male, inserted at top of very elongate neck of receptacle. Staminodes 3-5, linear. Ovary ovoid; lobes of thick style 3, 2-lobulate. Placentas 3 parietal. Fruit indehiscent, rostrate; seeds 6-12, imbedded in as many cellules.—A small herb,[1] root tuberous; leaves palmately 5-lobed; tendrils simple; male flowers[2] racemose; pedicels dilated at base, long, bearing a bract more or less elevated; female solitary. (*S. Africa.*[3])

56. **Toxanthera** Hook. f.[4]—"Flowers monœcious? Lobes of male calyx 5, ovately 3-angular. Corolla rotate. Stamens 5 (2 2-1); anthers all free, 1-celled, elongate incurved dorsifixed. Sepals of female flower subulate. Staminodes filiform curved. Ovary inferior, rostrate above; branches of columnar style 2, broadly fan-shaped at apex decurved. Ovules on 2 placentas numerous horizontal. Fruit fusiform fleshy; seeds ∞, globose smooth; cotyledons hemispherical.—A slender climbing herb; leaves reniform orbicular, not deeply 5-7-lobed; tendrils 2-fid; male flowers[5] racemose; female solitary." (*Natal.*[6])

57. **Kedrostis** Medik.[7]—Flowers (nearly of *Pisosperma*) monœcious or more rarely diœcious; male receptacle campanulate. Sepals 5, short. Petals 5, ovate-oblong, valvate or slightly imbricate. Stamens 5, alternipetalous, or 4 more or less approximate in pairs, inserted at top of receptacle; filaments short; anthers free or slightly coherent straight or slightly curved, 1-celled, introrse.[8] Rudimentary ovary glanduliform or 0. Female perianth as male; neck of receptacle more or less long. Staminodes 3-5, minute or 0. Placentas 2-3; ovules ∞, horizontal. Style 2-3-lobed at apex; lobes narrow or dilated. Fruit baccate, often rostrate, either indehiscent (*Eukedrostis*), or dehiscent by basal aperture (*Corallocarpus*[9]), seeds subglobose or tumid smooth.

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[1] Smell of onion or garlic.

[2] Yellowish, small.

[3] Spec. 1. *C. capense* Sond.

[4] *Icon.* t. 1421.

[5] Among smaller, yellow, pubescent.

[6] Spec. 1. *T. natalensis* Hook. f.

[7] *Phil. bot.* ii. 69.—Cogn. *Cucur oniandra* Schrad. *Eckl. et Zeyh. Enu* —*Cyrtonema* Schrad. *loc. cit.* 276.—*Rhynchocarpa* Schrad. *Linnæa*, xii. 403.—Harv. *Gen. S. afric. pl.* ed. 2, 126.—B. H. *Gen.* i. 831, n. 36.—Naud. *Ann. sc. nat.* sér. 4, xii. 146.

[8] Pollen 3-sulcate, 3-porous.

[9] Welw. *B. H. Gen.* i. 831, n. 37.—Cogn.

—Climbing or creeping herbs; root oftener perennial; leaves entire, dentate, lobed or partite; tendrils simple or rarely 2-fid; male flowers[1] racemose or corymbose; female solitary, racemose or sometimes fasciculate. (*Trop. Asia and Africa.*[2])

58. **Melancium** Naud.[3]—Flowers monœcious; male receptacle obconical or campanulate. Sepals 5, linear or dentiform. Petals 5, 2-auriculate above; auricles inflexed in bud. Stamens 5 (2-2-1); anthers straight;[4] connective ellipsoid.[5] Female perianth as male. Ovary inferior oblong; style columnar, dilated 3-lobed at stigmatose apex. Ovules ∞, horizontal. Other characters of *Kedrostis*. Fruit baccate, ovoid or globose; seeds ∞, flattened immarginate.—A creeping herb; root perennial; leaves crenate or lobed, without tendrils; male flowers[6] racemose; female solitary. (*Brazil.*[7])

59. **Trochomeriopsis** Cogn.[8]—Flowers diœcious; male receptacle long tubular.[9] Sepals 5, small subulate. Petals 5, inserted with calyx in throat of tube, elongate linear-subulate, subinduplicate, imbricate. Anthers 5, inserted within tube of receptacle sessile linear-elongate rimose, 1-celled; 4 connate in pairs; the fifth free. Female receptacle longer tubular, cupular above and bearing perianth inserted in throat like male. Ovary adnate with receptacular tube; placentas 2, 3, parietal, ∞-ovulate, finally accrescent around ovules in spurious cells; style erect slender, dilated above in 2, 3 rather thick petaloid and 2-lobed stigmatiferous branches. Fruit (immature) linear elongate siliquiform.—A glabrous climbing herb; leaves alternate rather fleshy entire subcordate, lobed or 3-foliolate; tendrils simple lateral to leaves or lower; flowers[10] in subsimple or loosely compound ramose male racemes. (*Madagascar.*[11])

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[1] Greenish yellow, small or minute.

[2] Spec. about 25. Hook. f. *Oliv. Fl. trop. Afr.* ii. 563; 565 (*Corallocarpus*).—Clke, *Hook. f. Fl. brit. Ind.* ii. 627.—Jacq. *Ic. rar.* t. 624 (*Trichosanthes*).—Wight, *Icon.* t. 503 (*Echmandra*).—Boiss. *Fl. or.* ii. 762.—Dietr. *Syn.* v. 363 (*Bryonia*).

[3] *Ann. sc. nat.* sér. 4, xvi. 175.—B. H. *Gen.* i. 833, n. 42.—Cogn. *Cucurb.* 659.

[4] Pollen spherical, 3-porous.

[5] Hairs of the margins extending to the cell.

[6] Yellowish, minute.

[7] Spec. 1. *M. campestre* Naud.—Cogn. *Mart. Fl. bras.* lxxviii. 23, t. 4, fig. 1.

[8] *Cucurb.* 661.

[9] More or less glandular at bottom or furnished with a rudimentary gynœcium.

[10] Yellowish.

[11] Spec. 1. *T. diversifolia* Cogn., in habit somewhat resembling the .

60. **Edgaria** Clke.[1]—Flowers diœcious (nearly of *Herpetospermum* or *Bismarea*); male receptacle lageniform campanulately dilated. Sepals 5, dentiform. Petals 5, entire. Stamens 5 (2-2-1); filaments short; anthers straight.[2] Rudiment of gynœcium long conical. Female perianth and receptacle as male. Ovary narrow ovoid; placentas 3; cells 1-3-ovulate; ovules horizontal or more or less descending; style slender; lobes 3, oblong, 2-fid. Fruit fusiform, 3-gonal, 3-celled, dry fibrous, finally 3-valvate; seeds descending compressed, subquadrate, subtrilobed at base.—A climbing herb; leaves entire cordate; tendrils 2-fid; male flowers[3] racemose or solitary; female solitary. (*Himalaya*.[4])

61. **Dendrosicyos** Balf. f.[5]—Flowers[6] monœcious; males paniculate; receptacle funnel-shaped; teeth of calyx 5, subulate entire patent. Petals 5, inserted in throat, lanceolate entire. Stamens 5, inserted in throat of receptacle; anthers closely coherent, 1-celled straight, 4 connate in pairs; connective not produced. Rudimentary ovary 0. Female flower axillar with articulate pedicel and scale like bracteoles; receptacle ovoid oblong, dilated above in a cupule. Sepals as male. Petals 5, 3-angular. Staminodes 5 (2-2-1) linear very small. Ovary 1-celled; style 3-lobed at apex; lobes channelled curved. Ovules in parietal placentas ∞.—Small trees, trunk straight, sometimes large; branches few fasciculate at apex; leaves palmately 5-lobed or partite aculeate scabrous without tendrils.[7] (*Socotora*.[8])

62. **Ceratosanthes** Burm.[9]—Flowers monœcious or diœcious; male receptacle tubular, cupular above. Sepals 5, oftener dentiform. Petals 5 oblong or linear, terminating at apex in 2 elongate closely and corrugately involute lobes, also induplicately valvate. Stamens 5, inserted below throat of receptacle; anthers sessile linear-oblong, 4 connate in pairs; the fifth free; cells extrorsely

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[1] *Journ. Linn. Soc.* xv. 113, 126, fig. 1-9.—Cogn. *Cucurb.* 662.

[2] Pollen smooth, 3-sulcate, 3-porous.

[3] Yellow, rather large.

[4] Spec. 1. *E. darjeelingensis* Clke, *loc. cit.*; *Hook. f. Fl. brit. Ind.* ii. 631.

[5] *Diagn. pl. socotr.* 17 (ex *Proc. Roy. Soc. Edinb.* xi.).

[6] "Large, straw-coloured."

[7] Flowers nearly of *Cucumis*; anthers straight.

[8] Spec. 1, 2. H. Bn, *Bull. Soc. Linn. Par.* (1885), 441.

[9] *Plum. Pl. amer.* i. 24.—Adans. *Fam. des pl.* ii. 139.—Arn. *Hook. Journ. Bot.* iii. 274.—B. H. *Gen.* i. 833, n. 45.—Cogn. *Cucurb.* 720.

rimose. Female receptacle tubular or globose below and enclosing inferior adnate ovary; placentas oftener 2, ∞-ovulate; style elongate, generally 2-lobed above; lobes stigmatose 2-fid or lobulate. Perianth as male. Staminodes 3 or 0. Fruit oblong or ovoid; seeds few or ∞, horizontal, ovate or subrotundate smooth often marginate.—Climbing herbs; root perennial tuberose; leaves glabrous or variously clothed, orbicular or variously lobed, sometimes 3-foliolate; tendrils simple slender; flowers[1] racemose or the female sometimes solitary axillar, ebracteate.[2] (*Trop. America.*[3])

63. **Maximowiczia** Cogn.[4]—Flowers diœcious (nearly of *Ceratosanthes*); receptacle cylindrical or narrowly campanulate striate, glandular below. Petals oblong or linear, not lobed, sometimes ciliate, imbricate or subvalvate. Style petaloid-3-lobed at apex. Berry globose; seeds few compressed marginate. Other characters of *Ceratosanthes*.—Perennial herbs; branches climbing; leaves 3-5-sected, lobes 2-sected or lobulate; male flowers[5] racemose, fasciculate or solitary; female solitary. (*Mexico, Texas.*[6])

64. **Cerasiocarpum** Hook. f.[7]—Flowers monœcious (nearly of *Maximowiczia*); male receptacle broadly campanulate; female below neck ovoid. Stamens 5 (2-2-1); anthers straight. Placentas 2, 3, 2-3-ovulate; style columnar, 2-3-lobed at stigmatose apex. Ovules horizontal. Fruit fleshy, transversely oblong; seeds 1-6, ovoid tumid smooth.—A climbing herb; leaves oblong cordate, sometimes hastately 3-lobed; male flowers[8] racemose; female solitary coaxillar. (*Java, Ceylon.*[9])

65. **Cucurbitella** Walp.[10]—Flowers monœcious or diœcious (nearly of *Maximowiczia*); male receptacle campanulate. Sepals 5, nar-

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[1] Whitish, small or minute.

[2] Very near the following genus.

[3] Spec. 7, 8. Ser. *DC. Prodr.* iii. 315 (*Trichosanthes*).—Cogn. *Mart. Fl. bras.* lxxviii. 65.—Griseb. *Fl. brit. W.-Ind.* 289.—*Bot. Mag.* t. 2703 (*Trichosanthes*).

[4] *Cucurb.* 726 (not Rupr.).—*Sicydium* A. Gray, *Bost. Journ. Nat. Hist.* vi. 194 (not Schlchtl).—B. H. *Gen.* i. 833, n. 44.

[5] Yellow, small.

[6] Spec. 2. Naud. *Ann. sc. nat.* sér. 4, xii. 144; xvi. 167, t. 4 (*Sicydium*).

Gen. i. 832, n. 39.—Cogn. *Cucurb.* 728.

[8] Yellow, small, ebracteate.

[9] Spec. 1. *C. Bennettii* Cogn.—*C. zeylanicum* Clke, *Hook. Fl. brit. Ind.* ii. 629.—*Bryonopsis Bennettii* Miq. *Fl. ind.-bat.* i. p. i. 125.—*Echmandra zeylanica* Thw. *Enum. pl. zeyl.* 125.

[10] *Rep.* vi. 50, not.—B. H. *Gen.* i. 834, n. 47.—Cogn. *Cucurb.* 730.—*Schizostigma* Arn. *Hook. Journ. Bot.* iii. 275 (not *Ann. Nat. Hist.*).—Wight, *Ann. and Mag. Nat. Hist.* viii. 267.—Endl. *Gen.* Suppl. ii. 77.—*Prasopepon* Naud. *Ann. sc. nat.* sér. 5, v. 26, t. 2.—B. H. *Gen.* i. 832, n. 41.

row; petals 5 induplicate or imbricate inserted at margin of receptacle. Stamens 5, 4 approximate in pairs; anthers curved, 1-rimose, free;[1] filaments short more or less connate; the fifth free oppositisepalous. Bottom of receptacle glandulose-thickened or few-setose, sometimes pilose within at margin. Female perianth as male; receptacular cupule produced below to an ovoid sac enclosing adnate ovary; placentas 3-5, soon accrescent in cells around ∞ horizontal ovules. Style erect columnar, sometimes girt at base by a thin epigynous disk, divided above into 3-6 unequal, entire or unequally 2-fid radiate and papillose branches. Fruit a globose or short ovoid berry, obtusely 3-6-sulcate, indehiscent; seeds oblong or ovoid rather compressed, not or slightly marginate.—Climbing herbs; rhizome perennial thick; leaves entire or palmatilobed or partite; tendrils simple; male flowers[2] racemose or subsolitary; female solitary or 2-nis. (*Extratrop. S. America.*[3])

VII. TELFAIRIEÆ.

66. **Telfairia** Hook.—Flowers diœcious; male receptacle cupular or turbinate. Sepals 5, inserted at margin. Petals 5, fimbriate, patent. Stamens 5, either alternipetalous, or 4 approximate in pairs opposite petals; the fifth opposite a sepal; filaments inserted in receptacle; anthers all 2-celled, curved, rimose; connective broad, slightly produced at apex. Female perianth as male, and receptacle dilated below neck in an oblong sac lobed at base. Ovary inferior, 3 5-celled; style exserted, capitately 3-lobed at apex; cells semi-2-locellate; ovules ∞, horizontal. Fruit conformed to ovary elongate costate, 3-5-celled; seeds (large) lenticular, enclosed in a retiform-fibrous skin. Cotyledons of thick fleshy embryo orbicular oleaginous 3-plinerved.—Climbing shrubs; leaves alternate digitate, 3-5-foliolate; folioles auriculate at base; dentate or laciniate; tendrils 2-fid; male flowers racemose; female solitary. (*Trop. E. and W. Africa.*)—See p. 415.

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[1] Pollen smooth, 3-sulcate, 3-porous.

[2] Yellow, small, often bracteate.

[3] Spec. 4. Gill. *Hook. Bot. Misc.* iii. 324 (*Cucurbita*).—Griseb. *Pl. Lorentz.* 146 (*Prasopepon*); *Symb. Fl. argent.* 135.—Walp. *Rep.* ii. 202 (*Schizostigma*).

67 ? **Anguria** Plum.[1]—Flowers diœcious or more rarely monœcious; male receptacle sac-like or elongate, coloured (*Gurania*)[2] or more or less greenish (*Euanguria*). Sepals 5, dentiform or more or less (*Gurania*) elongate, valvate. Petals 5, small, moderate, or rather large and patulous, linear; prefloration contorted or imbricate. Stamens 2, inserted at middle of receptacle sessile dorsifixed; anthers 2-celled;[3] cells linear, straight or sometimes curved or replicate at base, 2-rimose.[4] Female perianth as male, receptacle oblong, enclosing adnate ovary; style columnar, 2-fid; branches stigmatose 2-fid. Ovules ∞, inserted on 2 placentas, horizontal. Fruit ovoid or oblong, terete, angular or sulcate; seeds ovately oblong compressed immarginate.—Climbing perennial herbs or shrubs; leaves entire, lobed or 3–5-foliolate; tendrils simple; male flowers[5] racemose, spicate, corymbose or subcapitate at top of an elongate peduncle; female solitary, 2–3-nis or subcapitate. (*Trop. America.*[6])

68 ? **Helmontia** Cogn.[7]—Flowers diœcious (nearly of *Anguria*[8]); male receptacle tubular or clavate. Sepals 5, linear-dentate, recurved. Petals 5, valvate or slightly imbricate. Stamens 2; anthers subsessile; cells 2, submarginal; inserted in throat of receptacle. Ovary rudimentary subulate or 0. Female flower . . . ? —Climbing herbs; leaves entire or 3-foliolate; tendrils simple; male flowers racemose, articulate. (*Trop. S. America.*[9])

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[1] *Cat. pl. amer.* (1703), 3; *Pl. amer.* ed. Burm. 13.—L. *Gen.* n. 1037.—Lamk. *Dict.* i. 175.—Neck. *Elem.* i. 136.—Ser. *DC. Prodr.* iii. 318.—Endl. *Gen.* n. 5128.—B. H. *Gen.* i. 833, n. 43.—Cogn. *Cucurb.* 663.—*Psiguria* Neck. *Elem.* i. 137.

[2] Schlchtl, *Linnæa*, xxiv. 789 (*Anguriæ* sect.).—Cogn. *Bull. Soc. bot. Belg.* xiv. 239; *Cucurb.* 678.

[3] (?) If 2 anthers, 1-celled connate ? 4 petals also sometimes approximate in pairs, the fifth alternisepalous. (H. Bn, *Bull. Soc. Linn. Par.* 300.)

[4] Pollen smooth, 3-sulcate poricid.

[5] Rather large or small, either cochineal (*Anguria*), or corolla pale yellow (*Gurania*).

[6] Spec. about 55. Vell. *Fl. flum.* x. t. 1, 2.—Pœpp. et Endl. *Nov. gen. et spec.* t. 169-171.—Wawra, *Pr. Maxim. Reis. Bot.* i. t. 52.—Cogn. *Mart. Fl. bras.* lxxviii. 38; 44 (*Gurania*).—Paxt. *Mag. bot.* xvi. 322.—*Bot. Mag.* t. 5304.—Walp. *Rep.* ii. 197; v. 760; *Ann.* i. 316.

[7] *Bull. Soc. bot. Belg.* xiv. 239; *Cucurb.* 718.

[8] Of which perhaps rather a sect.

[9] Spec. 2. Cogn. *Mart. Flor. bras.* lxxviii. 64.

LXIX. LOASACEÆ.

I. LOASA SERIES.

Loasa (Blumenbachia) lateritia.

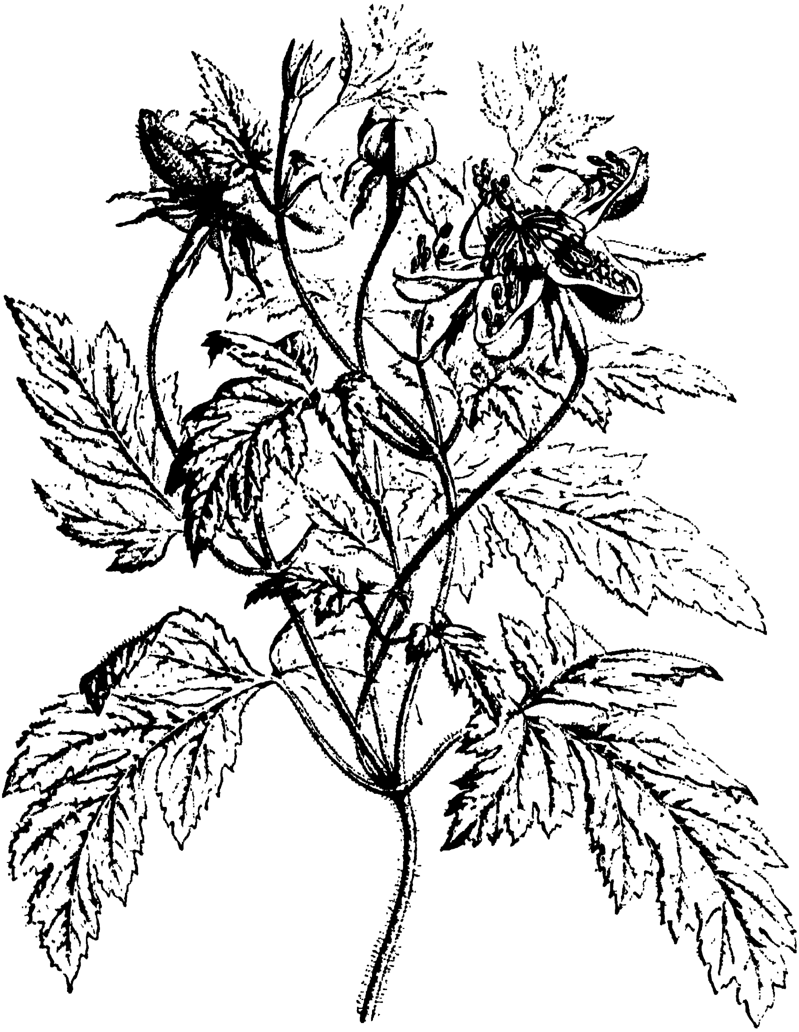

Fig. 305. Flowering branch.

The flowers are regular, hermaphrodite and pentamerous in

Loasa,[1] with a deeply concave receptacle in the form of an elongate, claviform, obconical or cylindrical pouch, which is only a dilatation of the summit of the peduncle. In *L. lateritia*[2] (fig. 305–308), not unfrequently cultivated in our gardens, and which has been referred to the genus *Blumenbachia*,[3] the margin of this receptacular pouch bears a calyx of five sepals, the prefloration of which is imbricate,[4] and which are more or less deeply dissected and pinnatifid at the margins like those of some Rosaciæ. The corolla consists of five petals, two halves of which are folded keel-like one upon the other, and which are induplicately valvate in the bud. The andrœcium is formed of ten fascicles of stamens. Five are composed of fertile stamens, superposed to the petals, and at a certain period are lodged in its cavity.[5] Each fertile stamen consists of a free filament and a tetragonal basifixed anther with two cells dehiscing by lateral longitudinal clefts. The five fascicles of stamens in the intervals of the petals are composed only of sterile pieces.[6] They consist of two thick long-conical filaments borne on a sort of shell

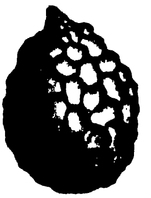

Fig. 307. Seed.

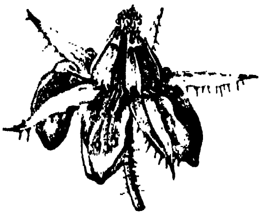

Fig. 306. Flower, stamens partly removed.

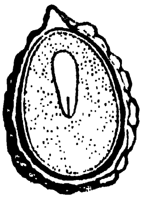

Fig. 308. Long. sect. of seed.

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[1] Adans. *Fam. des pl.* ii. 501.—J. *Gen.* 322. —DC. *Prodr.* iii. 310.—Endl. *Gen.* n. 5116.— B. H. *Gen.* i. 804, n. 8.—*Ortiga* Feuill. *Per.* ii. 737, t. 43.—*Illairea* Lenn. et Koch, ex *Fl. serr.* sér. 1, ix. 145, t. 913.—*Huidobria* C. Gay, *Fl. chil.* ii. 438, t. 26.

[2] Hook. *Bot. Mag.* t. 3632.—Lindl. *Bot. Reg.* n. ser. xi. t. 22.—*Cajophora lateritia* Benth. *Maund et Hensl. the Bot.* iii. t. 119.—*Raphisanthe lateritia* Lilj. *Linnæa*, xv. 263.

[3] Schrad. *Gœtt. Anz.* (1825), 1705; *Comm. gœtt. rec.* vi. (1827), 92.—DC. *Prodr.* iii. 340.— Endl. *Gen.* n. 5118.—B. H. *Gen.* i. 805, n. 9.— *Cajophora* Presl, *Rel. Hænk.* ii. 41, t. 56.— Endl. *Gen.* n. 5117.—Payer, *Organog.* 393, t. 84.—*Raphisanthe* Lilj. *loc. cit.*—*Gripidea* Miers, *Trans. Linn. Soc.* xxv. 227, t. 28.

[4] They early become valvate or even cease to touch.

[5] The movements which they make to bring themselves successively within, the anthers then surmounting the gynœcium, have received much attention (fig. 306).

[6] The pollen, where known, is ovoid; three folds; in water, three bands, ovoid or spherical (*Blumenbachia insignis*, *Loasa bryoniæfolia*, *Gronovia scandens*) (H. Mohl, *Ann. sc. nat* sér. 2, iii. 328).

or hood open above and within, the sinuous upper of which bears externally three petaloid and coloured staminodes, in the form of spatulate blades. The inferior ovary is one-celled, with three parietal placentas, one of which is anterior and multiovulate.[1] Each placenta unfolds internally in two salient lobes, and the ovules are in many series and anatropous. Above the andrœcium, the ovary is dilated into a sort of depressed pentagonal epigynous disk, with obtuse and alternipetalous angles, and is surmounted by a style with a central triangular canal, the extremity of which is divided into three stiff blades, approximate along their stigmatiferous margins. The fruit, which, like the ovary, is spirally twisted, is an elongate, claviform capsule, dehiscing along the back of the cells by three or six clefts, equally spiral;[2] and the seeds enclosed are numerous, furnished with an abundant fleshy albumen and an axile embryo of little magnitude.

L. lateritia is an herbaceous plant, perennial or subshrubby at the base. All parts are covered with rough stinging hairs. The stems are slender and twining. The leaves are opposite, simple, without stipules. The flowers, solitary and long-pedunculate, separate at the axil of a leaf and are accompanied by an axillar outer branch, itself bearing leaves and flowers.

Loasa proper differs from the preceding species only in a single character: the capsular fruit opens at the summit in 3–5 valves and remains rectilinear; or if contorted, it is rarely and incompletely. The corolla of the different species, however, is very variable in form; for in some species, as *L. argemonoides*, though dialypetalous, it appears quite campanulate, like that of a *Campanula* or of some Cucurbitaceæ. We can consider only as a section of this genus *Grammatocarpus*,[3] a Chilian plant, the fruit of which is straight, 5-valved, and the flowers sessile or nearly so.

Thus conceived, the polymorphous genus *Loasa* comprises about 70 species,[1] from the warm regions of South America. They are erect or twining herbs, with opposite or more rarely alternate leaves, simple, entire, lobed or one or more times pinnatisect. All their parts are covered with rough, often stinging hairs.[2] The flowers, often described as axillar, are generally lateral, solitary or in racemiform cymes. The inflorescence is not unfrequently what is called scorpioid.

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[1] The ovules have a single coat, according to PAYER, who has observed them from their origin to their separation from the middle of the placentas, and who has shown how the two lobes of these placentas cross each other. The exostome is sometimes thickened to an aril.

[2] The valves of the capsule vary from 3–12 according to the species. The style is often hollow, the cavity continuing upwards with that of the ovary. Often also the flattened branches touch marginally, circumscribing an elongate cavity, as in some Campanulaceæ.

[3] PRESL. *Symb.* i. 59, t. 38.—ENDL. *Gen.* n. 6115.—B. H. *Gen.* i. 806, n. 10.—*Scyphanthus* DON, *Sweet Brit. fl. Gard.* ser. 1, t. 238.

Mentzelia (fig. 309–311) is distinguished from *Loasa* and analogous genera particularly by the absence of scales covering the alternipetalous staminodes. The receptacle is tubular or obconical, and bears on its margin four or five imbricate sepals and a number of imbricate petals varying from 4 to 10. The stamens, inserted like the perianth, are in alternipetalous fascicles, all free and provided with a slender or more or less flattened filament. They may be all fertile and furnished with an oblong or didymous anther, at first inflexed upon the summit of the filament and dehiscing by two somewhat lateral fissures. But a certain num-

Mentzelia aurea.

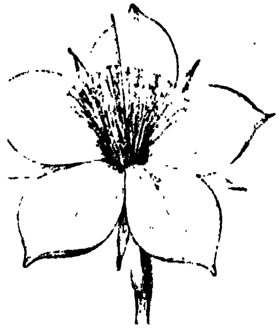

Fig. 309. Flower.

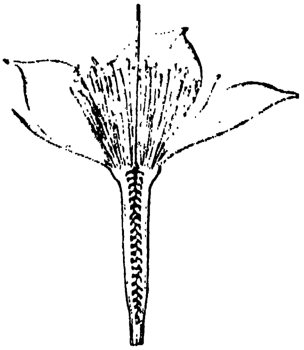

Fig. 310. Long. sect. of flower.

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[1] H. B. *Pl. æquin.* t. 14, 15.—A. S.-H. *Fl. Bras. mer.* i. t. 118 (*Blumenbachia*).—J. *Ann. Mus.* v. t. 1–5.—Hook. *Exot. Fl.* t. 83; *Icon.* t. 663.—Reichb. *Ic. exot.* t. 121 (*Blumenbachia*).—C. Gay, *Fl. chil.* ii. 432 (*Blumenbachia*), 436 [illegible]), 438 (*Huidobria*), 441; 464 (*Scyphanthus*), t. 27.—Presl, *Symb.* t. 39.—Wedd. *Chlor. andin.* t. 74.—*Bot. Reg.* t. 667, 785, 1390, 1599; (1838), t. 22 (*Raphisanthe*).—*Bot. Mag.* t. 2372; 2865 (*Blumenbachia*), 3048, 3057, 3218; 3399 (*Blumenbachia*), 3632 (*Raphisanthe*), 4095, 4428; 5028 (*Grammatocarpus*).—Walp. *Rep.* ii. 225; 227 [illegible] *ora, Blumenbachia*); v. 778 (*Grammatocarpus*), 79; 781 (*Cajophora, Blumenbachia*); *Ann.* ii. 656; 657 (*Blumenbachia*); v. 5.

[2] Their form is variable. They often bear one or several verticils of recurved hooks.

ber of them, five or more, become sterile in many species; and the filament may then be more or less dilated to a petaloid blade. The ovary, one-celled, has three to five parietal placentas bearing a variable number of anatropous ovules, and is surmounted by a style with 3–5 stigmatose branches, often contorted, sometimes flattened and petaloid. The fruit is a straight capsule with compressed seeds, with or without albumen. There are Mentzelias with 4-merous flowers. They are all American plants, herbaceous or shrubby, erect, often scabrous; with alternate, entire or more or less deeply dissected leaves; and flowers solitary or in cymes sometimes racemose.

Mentzelia aurea.

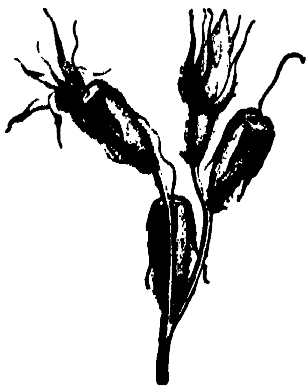

Fig. 311. Bud and fruit.

Klaprothia mentzelioides, a herb of Columbia and Venezuela, with opposite leaves, hardly differs from *Mentzelia*; it has flowers of small size, the andrœcium of which is formed of 4, 5 oppositipetalous ranks of numerous fertile stamens, and 4, 5 alternate groups of staminodes various in form. *Sclerothrix*, also a herb with opposite leaves, growing in Peru, Venezuela and Mexico, appears to be *Klaprothia* with a diminished andrœcium, each of the oppositipetalous groups having only 1–3 stamens. The fruit is contorted when fully developed.

Kissenia spathulata.

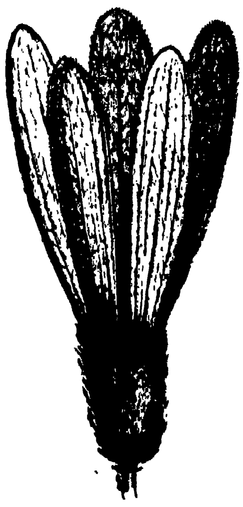

Fig. 312. Fruit.

Kissenia spathulata (fig. 312) is exceptional in this group by its calyx which persists hardened above the fruit, and crowns it with five rigid wings. Its ovarian cells, moreover, are uniovulate, and the ovules are descending. It is a subshrubby herb from the Cape and shores of the Red Sea; it has alternate leaves and flowers in terminal scorpioid cymes.

II. GRONOVIA SERIES.

Gronovia[1] (fig. 313–316) has hermaphrodite flowers, and a purse-like receptacle the margin of which bears the perianth and andrœcium, and its large neck is produced to a very small extent above the ovary lodged in its cavity. The calyx is coloured, formed of five valvate sepals, and the corolla is represented by five small much shorter lanceolate or spatulate petals. The andrœcium, inserted with the petals, consists of five stamens alternating with them the filament of which bears a bilocular introrse anther dehiscing by two longitudinal clefts. The inferior ovary is surmounted by an epigynous, cupular disk and a simple style slightly capitate at its stigmatiferous summit. In the one ovarian cell is a single descending anatropous ovule, inserted near the summit with ascending micropyle.[2] The fruit, around which the receptacle is dilated in five small thick oppositipetalous wings,[3] is an achene, surmounted by the remains of the perianth and andrœcium, and containing a descending exalbuminous seed, with an embryo furnished with a short superior radicle and fleshy cotyledons with

Gronovia scandens.

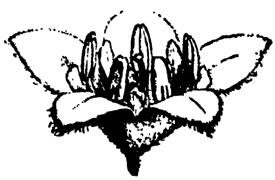

Fig. 313. Flower.

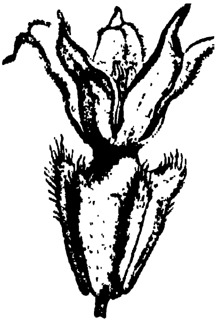

Fig. 315. Fruit.

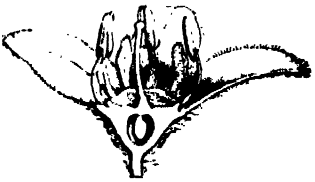

Fig. 314. Long. sect. of flower.

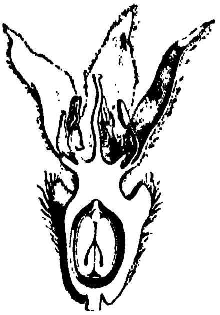

Fig. 316. Long. sect. of fruit.

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[1] L. *Gen.* n. 282.—LAMK, *Dict.* iii. 47; *Ill.* t. 144.—DC. *Prodr.* iii. 320.—ENDL. *Gen.* n. 5152.—B. H. *Gen.* i. 802, n. 1.—H. BN, *Adansonia*, v. 190.

[2] It is at the same time brought against the ovarian wall under the point of attachment of the ovule.

[3] Resembling, on a small scale, those of *Illigera*.

induplicately lobed margins. *G. scandens*,[1] the only species of the genus, is a climbing herb of Central America, charged with biuncinate hairs. The leaves are alternate, cordate, sublobed; and the flowers[2] are in corymbiform, pedunculate, oppositifoliate cymes, with articulate pedicels and small bracts.

Beside *Gronovia* are placed two Mexican genera *Cevallia* and *Petalonyx*. The former are herbs resembling *Scabiosa* and *Brunonia* in habit; they have sinuate leaves and the flowers are in false terminal capitules having five stamens with short filaments, long appendiculate anthers. The latter are rigid scabrous herbs, with sessile, nearly entire leaves; the flowers are in foliate spikes, in construction like those of the preceding genera, with elongate staminal filaments and didymous anthers.

The family of Loasaceæ was established at the commencement of the present century.[3] Till then it had been comprised among the genera allied to the Onagrariaceæ.[4] It is extremely near Cucurbitaceæ,[5] from which it differs only in its albuminous seeds and its polyandrous and non-isostemonous andrœcium grouped in fascicles. Even this difference disappears in the Gronovieæ, the flower of which is isostemonous, and which connects the family with the Dipsacaceæ and Compositæ. There are more than a hundred species of Loasaceæ; except *Kissenia* they are all American. We have arranged them in eight genera though the number has been carried to more than twenty and, with Loasa and Mentzelia, might be doubled at least if based upon the variations of the corolla, the andrœcium, the fruit and the seeds. We hope that some wise and prudent monograph will save us from this misfortune.

The two series we distinguish in this family are :—

I. LOASEÆ.[6]—Ovary with 2–3 cells, complete or incomplete, uniovulate or more generally multiovulate.—5 genera.

II. GRONOVIEÆ.[7]—Ovary unilocular and uniovulate.—3 genera.

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[1] L. *Spec.* 292.—JACQ. *Ic. rar.* t. 338.—HOOK *Beech. Voy. Bot.* t. 97.—*G. Humboldtiana* RŒM. et SCH. *Syst.* v. 492.

[2] Small and yellowish.

[3] JUSS. *Ann. Mus.* v. 18; *Dict. sc. nat.* xxvii. 93 (*Loaseæ*).—DC. *Prodr.* iii. 339, Ord. 82.—ENDL. *Gen.* 929, Ord. 199.—B. H. *Gen.* i. 801, Ord. 72.—*Loasaceæ* LINDL. *Introd.* ed. 2, 53; *Veg. Kingd.* 744.

[4] J. *Gen.* 321.

[5] To which perhaps it ought to be reunited.

[6] *Loaseæ veræ* H. B. K. *Nov. gen. et spec.* vi. 115.

[7] *Gronovieæ* ENDL. *Gen.* 940.

GENERA.

I. LOASEÆ.

1. **Loasa** Adans.—Flowers hermaphrodite regular; receptacle tubular, clavate, ovoid or subglobose, enclosing adnate ovary and bearing perianth at margin. Sepals 5, equal or unequal. Petals 5, alternate, cucullate or saccate, sometimes connivent in campanulate corolla, imbricate. Stamens ∞, in 5 oppositipetalous fascicles, inserted with perianth. Cucullate scales 2–5, alternate with petals. Staminodes 10, in pairs opposite scales, filiform. Ovary inferior, 1-celled; style various, stigmatose apex acute or 3–5-fid, often hollow. Placentas 3–5 parietal; ovules ∞, anatropous. Fruit capsular, straight or sometimes (*Blumenbachia*) spirally twisted, at apex 3–5-valved (*Euloasa*, *Grammatocarpus*) or long 5–10-valved (*Blumenbachia*). Seeds ∞, various; cotyledons of albuminous embryo foliaceous or oftener plano-convex.—Erect or twining herbs, hispid-setose; hairs oftener stinging; leaves opposite or alternate, entire, lobed, pinnatisect or decomposite; flowers axillar or lateral, sessile (*Grammatocarpus*) or pedunculate, often in racemes or more or less compound cymes. (*Trop. and extratrop. Africa.*)—See p. 458.

2. **Mentzelia** L.[1] — Flowers nearly of *Loasa*; receptacle cylindrical, obconical or obpyramidal, turbinate or ovoid. Sepals

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[1] *Gen.* n. 670.—J. *Ann. Mus.* v. 24.—DC. *Prodr.* iii. 343.—Endl. *Gen.* n. 5111.—B. H. *Gen.* i. 804, n. 7.—H. Bn, *Dict. Bot.* tab. chrom. —*Bartonia* Sims, *Bot. Mag.* t. 1487.—Endl. *Gen.* n. 5112.—Payer, *Organog.* 394, t. 85.—*Eucnide* Zucc. *Abh. Baier. Akad. Wiss.* iv. 1, t. 1.—*Microsperma* Hook. *Icon.* t. 234.—*Acrolasia* Presl., *Rel. Hænk.* ii. 39, t. 55.—*Chrysostoma* Lilj. *Linnæa*, xv. 263.

4–5, or more rarely 6–10, inserted at margin of receptacle, imbricate or finally valvate. Petals same in number alternate, oftener elongate, imbricate or valvate. Scales 0. Fertile stamens ∞, in oppositipetalous groups, often not distinct; filaments free slender, often finally recurved; anthers various in form, oftener short, 2-celled. Ovary inferior, 1-celled; style slender, subentire or 3–5-fid at stigmatose apex; lobes rather obtuse twisted or nearly straight. Staminodes 5 or more; the outer sometimes petaloid. Ovules ∞, on parietal placentas, often 2-seriate on each, anatropous.[1] Fruit capsular, cylindrical or clavate, sometimes oblong or obconical straight; seeds ∞, angular, flat or alate, smooth or scabrous; outer integument cellulose or membranous; albumen various or 0; cotyledons of straight embryo oblong flat; radicle terete.—Herbs, sometimes shrubby, glabrous or oftener scabrous or setose; leaves alternate, sessile or petiolate, entire, pinnatifid or variously lobed; flowers[2] solitary or in racemose cymes. (*Trop. and subtrop. America.*[3])

3. **Klaprothia** H. B. K.[4]—Flowers nearly of *Mentzelia*, 4–5-merous; petals slightly imbricate. Stamens 15–20, in oppositipetalous bundles, alternating with about as many alternisepalous staminodes entire or 2-lobed at apex. Placentas 4–5, pluriovulate. Style branches 4–5, pointed, approximate. Fruit obconical hispid with glochidiate hairs, 4–5-valved; seeds . . . ?—A twining herb;[5] leaves opposite dentate; flowers[6] in loose terminal and axillar racemiform cymes, few. (*Columbia, Venezuela.*[7])

4. **Sclerothrix** Presl.[8]—Flowers nearly of *Klaprothia*;[9] petals 4, subcucullate, slightly imbricate. Stamens in oppositipetalous bundles (1–3 in each) small; filaments slender erect unequal; anthers short. Staminodes 4, alternipetalous, oftener dissimilar or sometimes minute. Ovary obconical, convex at vertex; style

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[1] Concerning the sometimes anomalous position of the raphe see H. Bn, *Bull. Soc. Linn. Par.* 513.

[2] Yellow or white, sometimes large showy.

[3] Spec. about 30. Hook. *Beech. Voy. Bot.* t. 85; *Fl. bor.-amer.* i. t. 69.—A. Gray, *Pl. Lindheim. Bost. Journ. Nat. Hist.* vi. 191.—*Bot. Mag.* t. 1760, 3205, 4491, 5183.—Walp. *Rep.* ii. 223; 224 (*Bartonia*); v. 776; 777 (*Microsperma*); *Ann.* i. 320; ii. 655 (*Acrolasia*), 656.

[4] *Nov. gen. et spec.* vi. 121, t. 537.—DC. *Prodr.* iii. 343.—Endl. *Gen.* n. 5113.—B. H. *Gen.* i. 804, n. 6.

[5] Retrorsely hispid; habit of *Urtica*.

[6] Whitish, small.

[7] Spec. 1. *K. mentzelioides* H. B. K.

[8] *Symb.* ii. 3, t. 53.—Endl. *Gen.* n. 5114.—B. H. *Gen.* i. 803, n. 5.—*Ancyrostemma* Poepp. et Endl. *Nov. gen. et spec.* 803, n. 5.

[9] Of which perhaps a sect. with depauperated andrœcium.

pointed, subentire or emarginate at apex; placentas 3–4, parietal, ∞-ovulate. Fruit capsular small clavate, twisted, finally 3–4-valved; seeds, &c., of *Mentzelia*.—A slender hispid branching herb, often annual; leaves opposite serrate; flowers[1] axillar and terminal cymose; cymes sometimes few- or 1-flowered. (*Peru*, *Venezuela*,

5. **Kissenia** R. Br.[3]—Receptacle obconical, 10-costate enclosing inferior adnate ovary. Sepals 5, marginally inserted, oblong subspathulate, venose. Petals 5, alternate, shorter, orbicular concave, imbricate. Scales 5, alternipetalous ligulate inflexed, 2-dentate. Stamens ∞, in 5 bundles; filaments thin unequal; anthers short, 2-dymous; staminodes ∞, linear, alternate with staminal groups, sometimes few. Ovary imperfectly 2–3-celled; dissepiments centripetal; branches of short style 2–3 linear stigmatose. Ovules in cells solitary inserted below apex descending. Fruit dry, crowned with accrescent calyx, 1–3-celled; wings rigid erect; seeds 1–3 exalbuminous; cotyledons of slightly fleshy embryo plano-convex; radicle short superior.—A rough herb or undershrub; leaves alternate petiolate coriaceous, 5–7-lobed; lobes dentate; flowers[4] in terminal 1-parous cymes, shortly pedicellate. (*Trop. E. and S. Africa.*[5])

II. GRONOVIEÆ.

6. **Gronovia** L.—Flowers hermaphrodite regular; receptacle shortly concave. Sepals 5, inserted at mouth of receptacle, valvate. Petals 5, linear-spathulate narrow, finally not contiguous. Stamens 5, inserted alternately with petals; filaments slender, finally erect; anthers oblong, introrse, 2-rimose. Ovary inferior; adnate within receptacular cavity, 1-celled; style erect, capitellate at stigmatose apex. Ovule 1, inserted below apex of cell descending, anatropous; micropyle superior. Fruit dry crowned with calyx, costate or narrowly 5-alate, indehiscent; seed 1, descending

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[1] White or yellowish, small.

[2] Spec. 2. Walp. *Rep.* v. 777; 778 (*Ancyrostemma*).

[3] Ex Endl. *Gen.* Suppl. ii. 76 (*Fissenia*).—B. H. *Gen.* i. 803, n. 4.—*Cnidone* E. Mey. exs. *Drège.*

[4] Yellow, densely hispid externally.

[5] Spec. 1. *K. spathulata* R. Br. ex Harv. et Sond. *Fl. cap.* ii. 503.—Mast. *Oliv. Fl. trop. Afr.* ii. 501.—*Fissenia capensis* Endl.—Harv. *Thes. cap.* t. 98.—*Cnidone mentzelioides* E. Mey. ex Harv.

striate; cotyledons of exalbuminous embryo fleshy lobulate; radicle superior.—A climbing herb with scattered 2-uncinate hairs and piles; leaves alternate petiolate cordate, 5-lobed; flowers in compound corymbiform oppositifoliate cymes; pedicels articulate bracteolate. (*Central America.*)—See p. 463.

7. **Cevallia** LAG.[1]—Receptacle oblong obconical. Sepals 5, and petals 5 equal linear oblong, marginally inserted. Stamens 5, alternipetalous; filaments short; anthers oblong, dorsifixed at base; cells linear, longitudinally rimose, free below insertion; connective produced in an oblong subspathulate process longer than cells. Ovary inferior, 1-celled; disk epigynous very thin; style short, ovoid-conical at stigmatose apex. Ovule 1, laterally inserted below apex of cell, anatropous; funicle descending dilated in a short cover over superior micropyle. Disk epigynous thin or 0. Fruit dry, hispid, crowned with perianth, indehiscent. Seed smooth; radicle of exalbuminous embryo superior short.—A whitish scaberulous herb; leaves alternate sessile sinuately pinnatifid; flowers[2] in terminal capituliform contracted cymes; bracteoles 2, conformed to folioles of perianth. (*N.-Mexico, Texas.*[3])

8. **Petalonyx** A. GRAY.[4]—Receptacle shortly obconical. Sepals 4–5, short, deciduous. Petals 4–5, inserted with and longer than sepals, long attenuated at base. Stamens 4–5, equal or longer than petals; filaments slender; anthers short 2-dymous. Ovary, disk[5] and ovule of *Cevallia*; style slender nearly equal in length to stamens, entire at stigmatose apex. Fruit hispid breaking irregularly; seed exalbuminous. Other characters of *Cevallia*.—An erect scabrous herb (subshrubby ?); leaves alternate subsessile unequally dentate; flowers[6] in compound terminal, capituliform or shortly spiciform cymes; bract and lateral bracteoles conformed to leaf smaller. (*N.-Mexico, California.*[7])

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[1] *Nov. gen. et spec.* 11, t. 1.—ENDL. *Gen.* n. 3036[1].—H. BN, *Adansonia*, v. 191.—B. H. *Gen.* i. 803, n. 2.—*Petalanthera* TORR. ex NUTT. *id. Philad.* vii. p. i. 107.

sh, dense, like the whole plant, irtellately setose.

[3] *Spec.* 1. *C. sinuata* LAG.—WALP. *Rep.* ii. 25.—HOOK. *Icon.* t. 252.—*Petalanthera hispida* NUTT.

[4] *Mem. Amer. Acad.* v. 319.—B. H. *Gen.* i. 803, n. 3.

[5] Thicker than in *Cevallia.*

[6] Yellowish, moderate.

[7] *Spec.* 3. TORR. *Mex. Bound. Bot.* t. 22.—A. GRAY, *Bot. Calif.* i. 238.—WALP. *Ann.* v. 5.

LXX. PASSIFLORACEÆ.

I. PASSION-FLOWER SERIES.

The flowers of the Passion-flowers[1] (fig. 317–322) are regular and most frequently hermaphrodite and pentamerous. The re-

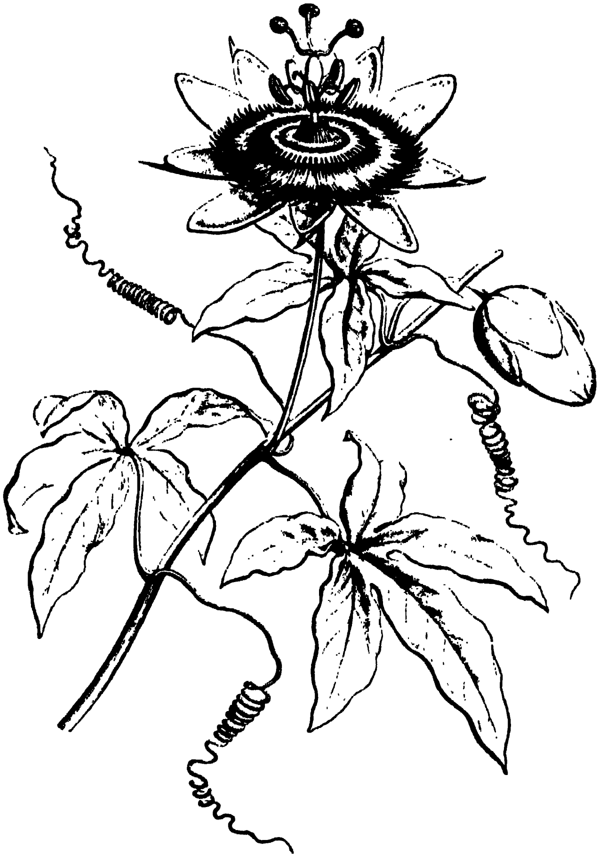

Fig. 317. Flowering branch.

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[1] *Passiflora* L. *Gen.* n. 1021.—J. *Gen.* 397.—DC. *Prodr.* iii. 332.—Endl. *Gen.* n. 5098.—Payer, *Organog.* 396, t. 81.—B. H. *Gen.* i. 810, n. 3.—Mast. *Contrib. Nat. Hist. Passifl. Trans.*

ceptacle is pouch-like, often shallow, on the margin of which is inserted the perianth, whilst from the bottom rises a central column bearing the stamens and above them the gynœcium. The calyx is formed of free sepals, quincuncially imbricated in the bud, sometimes coloured at the margin or within; and the corolla, not unfrequently wanting, is composed of five petals alternating with the sepals, imbricate in prefloration. The stamens are five in number and alternipetalous. They form a sort of collarette at the top of the stem bearing the gynœcium, and are composed each of a free filament and a bilobed anther, introrse at first, then oscillating,[1] dehiscing by two longitudinal fissures.[2] The ovary is free, superior, unilocular, with three parietal placentas, one anterior, two posterior, and a style with three branches the

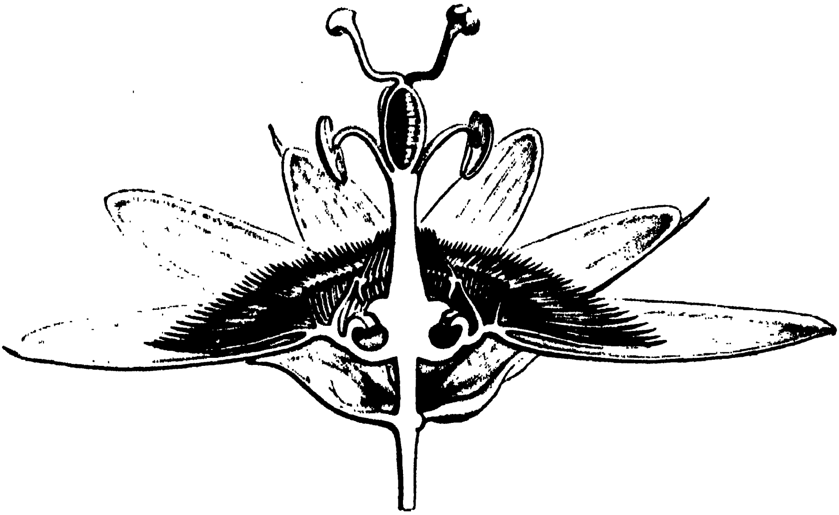

Fig. 318. Long. sect. of flower.

Linn. Soc. xxvii. 608, t. 64, 65.—H. Bn, *Bull. Soc. Linn. Par.* 521.—*Granadilla* T. *Inst.* t. 123, 124. — GÆRTN. *Fruct.* i. 289. — *Anthactinia* BORY, *Ann. gén. sc. phys.* ii. 133.—*Ceratosepalum* ŒRST. *Rech. Fl. Amér. centr.* t. 17.

[1] The insertion of the attenuated filament is the anther, below two prominences of the connective, spherical in *P. cœrulea*.

[2] The pollen is remarkable for its elliptic opercules. In *P. angustifolia*, *perfoliata*, &c., there is one in each of the six longitudinal furrows of the ellipsoid grain distended in the middle. The outer membrane is granular. The moistened grain becomes a sphere with six bands. In *P. cœrulea*, *alata*, &c., the grain, spherical, without fold, has an external cellular membrane and three very large opercules. There are four in *P. kermesina* (H. MOHL, *Ann. sc. nat.* sér. 2, iii. 327).

enlarged extremities of which terminate in a stigmatose head, often globular.[1] Each placenta bears a limited and oftener indefinite number of anatropous ovules,[2] ascending or nearly horizontal.

The receptacle, in the Passion-flowers, slowly assumes exceptional developments, which are the points of departure for the production of a number of concentric collarettes, the nature of which has given rise to numerous discussions, and which are now considered, from their late appearance, as belonging to the order of disks. The coloured filaments forming these crowns are most frequently narrow and elongate. But there are also some smaller and less brilliant interposed between them; in some species commonly cultivated, as *P. cærulea*, there are five series, without counting an interior thick fleshy silvery re-entry of the receptacular cupule, which projects below all these collarettes, and the glandular margin of which is nectariferous, as is likewise a portion of the receptacular cavity. In other species the number is, on the contrary, considerably reduced.

Passiflora cærulea.

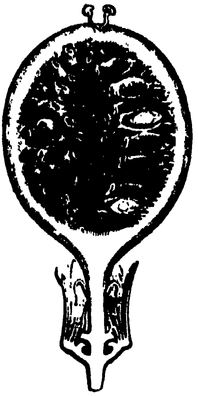

Fig. 319. Long. sect. of fruit (½).

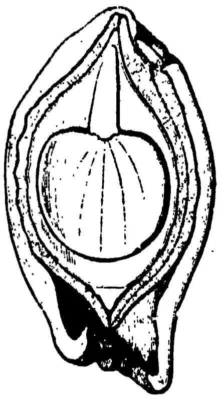

Fig. 320. Long. sect. of seed ($\frac{5}{1}$).

The fruit of the Passion-flowers is a berry, sometimes nearly dry, and finally opening or bursting to allow the escape of the seeds. The latter have, under their integuments, often externally pitted and covered with a fleshy, coloured umbilical aril, a fleshy albumen, the axis of which is occupied by an embryo with foliaceous cotyledons.

There are Passion-flowers in which the floral receptacle is elongated and becomes more or less cylindrical instead of cupuliform;

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[1] The ovary is *acropylate* (H. Bn, *Bull. Congr. Pétersb.* (1884), 63, t. 3, fig. 12, 13) in the space between the bases of the three stylary branches, and presents outside its apical channel a papillose surface on which the pollen grains are arrested and germinated.

[2] They have two coats.

of these a genus *Tacsonia*[1] has been made. There are others, as *Monactineirma*,[2] *Astephananthes*[3] and some species of *Murucuja*,[4] in which the flowers are apetalous; others, as *Tetrapathæa*,[5] in which the polygamo-diœcious flowers are tetramerous.

The collarette-like disks, the number of which, we have seen, is very variable, are reduced to one or two series of filaments in *Murucuja* and *Disemma*.[6]

Thus constituted, the genus comprises about 150 species,[7] Asiatic, Australian, but especially American. They are herbaceous or shrubby plants, rarely erect, nearly always climbing. The leaves, alternate, rarely opposite, are entire, dentate, lobed or partite, with a petiole often glanduliferous, with or without stipules. The flowers, solitary, geminate or in clusters, are ordinarily inserted on a transformed axis, the tendril, which, with a bud, generally occupies the axil of the leaves; and the articulate pedicels are most frequently accompanied by one or two bracts forming an involucre to the bud.

Passiflora edulis.

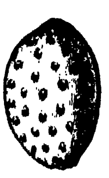

Fig. 321. Seed without aril (⅔).

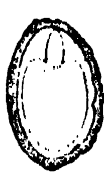

Fig. 322. Long. sect. of seed.

Near the Passion-flowers are ranged *Paropsia* and *Deidamia*, tropical African plants. In the latter the flower, pentamerous or more rarely tetramerous, has an andrœcium of 5–8 stamens and a double disk, the outer formed of filaments. The gynœcium has a short foot and an ovary with 3-6 parietal placentas. They are twining plants of Madagascar, with compound pinnate or decompound leaves; the lower folioles may be replaced each by a pair of folioles. In *Paropsia* (fig. 323–325), there are five, ten or twenty stamens; and the gynœcium, inserted in the centre of a cupuliform receptacle, has an ovary with 2-5 parietal placentas, with the same number of stylary branches, narrow or dilated. The fruit is coriaceous, often trivalve, with scrobiculate seeds containing a thick or membranous albumen. They are trees or shrubs with simple leaves from Malaya, tropical western Africa or Madagascar.

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[1] *Gen.* 398; *Ann. Mus.* vi. t. 58 60.—DC. *Prodr.* iii. 333.—Endl. *Gen.* n. 5101.—B. H. *Gen.* i. 811, n. 4.—*Poggendorfia* Karst. *Fl. Columb.* i. 29, t. 15.—? *Rathea* Karst. *loc. cit.* 77, t. 38 (flowers said to be without crown).

[2] Bory, *Ann. gén. sc. phys.* ii. 138.—*Cieca* (*Passifloræ* sect.) B. H. *Gen.* i. 810.

[3] Bory, *loc. cit.* 138.

[4] Pers. *Syn.* ii. 222.—DC. *Prodr.* iii. 333.

[5] Raoul, *Ann. sc. nat.* sér. 3, ii. 122; *Pl. N.-Zél.* t. 27.

[6] Labill. *Sert. austro-caled.* 79, t. 79.—DC. *Prodr.* iii. 332.—We can consider only as a sect. of the genus *Tetrastylis* Barb.-Rodr. (*Revist. de Engenharia*, 14 Nov. 1882), which has quite the flower of a *Passiflora* or *Tacsonia*, with 4 carpels instead of 3 to the gynœcium. It is true the staminal filaments are detached from the column a little bellow the base of the ovary; this is an approach to the organization of *Dilkea*, and is seen also in some species of *Tacsonia*. There are occasionally 4-merous gynœcia in our cultivated *Passifloras*.

[7] H. B. *Pl. æquin.* i. t. 22, 23.—Pœpp. et Endl. *Nov. gen. et spec.* ii. t. 177, 178.—Benth. *Fl. Austral.* iii. 311.—Mast. *Hook. f. Fl. brit. Ind.* ii. 599; *Journ. Hort. Soc. Lond.* (1874), iv. 125; *Mart. Fl. bras.* xiii. 535 (*Tacsonia*), 542, t. 107–128.—Griseb. *Fl. brit. W.-Ind.* 290.—Tri. et Pl. *Ann. sc. nat.* sér. 5, xvii. 122.—*Bot. Reg.* t. 28, 59, 79, 144, 188, 233, 288, 507, 574, 660, 673, 737, 870, 1603, 1633; (1838), 21; (1840), 52.—*Bot. Mag.* t. 288, 2015, 2619, 2868, 2967, 3635, 3636, 3697, 3503, 3773, 4009, 4406, 4565, 4674, 4752, 4958, 5737, 5864, 5876, 5911, 6069, 6129.—Walp. *Rep.* ii. 218, 534; v. 771; *Ann.* i. 319; ii. 651; v. 1.—Mast. *Journ. Linn. Soc.* xx. 26 (*Tacsonia*), 30; *Trim. Journ. Bot.* (1884), 113 (*Tacsonia*), 114.

Paropsia edulis.

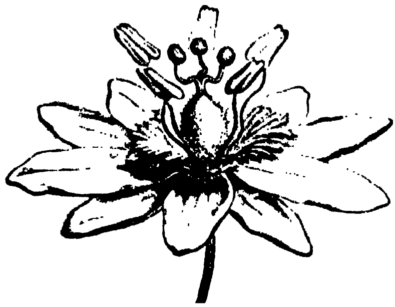

Fig. 323. Flower.

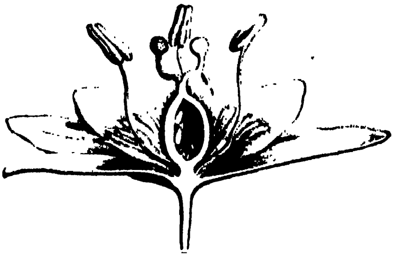

Fig. 325. Long. sect. of flower.

Paropsia edulis.

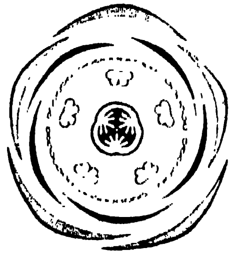

Fig. 324. Diagram.

Dilkea, from Brazil, approaches the three preceding genera in many respects. It has the perianth, the gynœcium, the collarettes and the long ovarian support of the Passion-flowers; but the stamens are inserted near the foot of the support instead of near the top; they are eight in number. It differs from *Paropsia* and *Smeathmannia*, which may have the same andrœcium, inasmuch as in these two genera it is independent of the podogyn, which, moreover, is very short or wanting altogether. In *Mitostemma*, a Brazilian tree, the leaves are simple, lauriform; and the flowers, 4–5-merous, in axillary clusters, have a receptacle little concave, a disk formed of numerous linear blades, a short podogyn and four or five few-ovulate placentas, with the same number of stylary branches with a reniform and much dilated stigmatiferous extremity.

Barteria, *Hounea* and *Soyauxia*, African genera, have also simple oval or lanceolate leaves with an erect woody trunk. The first, arborescent and western, has a shallow receptacle, a double disk, the exterior fringed; stamens indefinite in number and a style dilated and entire at the summit. The flowers are axillary or in lines decurrent from each side of the petiole. *Hounea*, from Madagascar, is a moderate-sized tree the leaves of which are trained above their axillant bract on the divisions of a terminal group of cymes. The double perianth is pentamerous; and the ovary, with five parietal placentas, surmounted by the same number of styles, occupies the summit of a short podogyn at the top of which are inserted five stamens. The disk is a collarette formed of a great number of hirsute filaments. *Soyauxia*, a tree of Gaboon, has the inflorescence in axillary clusters of *Mitostemma*. The flowers have a calyx and corolla formed each of four or five folioles, numerous stamens, a disk divided into numerous filaments; but the sessile ovary is surmounted by three divergent styles, inserted near the periphery of the ovary, and the latter contains only six ovules pendent in pairs from the top of three parietal placentas.

Tryphostemma, inhabiting South Africa, consists of small erect herbs, sometimes shrubby, without tendrils and corollas, with 4–5-androus flowers and an ovary with 3–4 parietal placentas. Perhaps to them ought to be added *Basananthe*, from western tropical Africa, which has, with the same habit, small linear petals and three parietal placentas, each bearing only a single ovule.

Physena, climbing plants of Madagascar, appear to represent a diminutive type of *Paropsia* and *Smeathmannia*, in which the flowers are unisexual and apetalous. The calyx is reduced to several small imbricate folioles, and the number of stamens is variable. The gynœcium, reduced to sterile carpels in the male flower, becomes, in the female, a unilocular fruit, similar to that of a *Paropsia*, but generally monospermous, and the seed is destitute of albumen.

II. MODECCA SERIES.

The flowers of *Modecca*[1] (fig. 326–328) are regular and unisexual. They have a cupuliform receptacle, on the margin of which is inserted a petaloid calyx, with four or five divisions united to a greater or less height in a cylindrical or enlarged tube. These divisions are imbricated in the bud, often longer and narrower in the female flower, and sometimes dissimilar in that those at the margin covering the others are entire while those covered are divided. The petals are inserted, like the calyx, on the margin of the receptacular cup alternately with the sepals, generally short, often narrow, especially in the female flowers, sometimes very finely divided at the margin. The receptacle also bears, within the insertion of the perianth, a simple or double collarette, formed of blades very variable in form and sometimes scarcely developed.

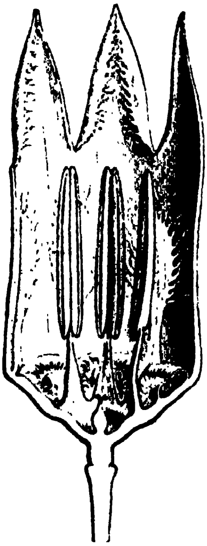
Fig. 326. Male flower.

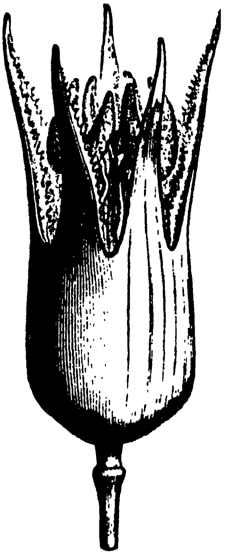
Fig. 327. Female flower.

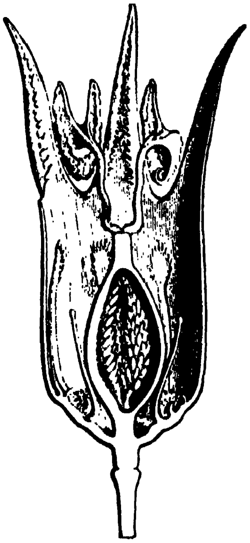
Fig. 328. Long. sect. of female flower.

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[1] LAMK, *Dict.* iv. 208.—DC. *Prodr.* iii. 336.—ENDL. *Gen.* n. 5103.—B. H. *Gen.* i. 813, n. 12.—*Kolbia* P.-BEAUV. *Fl. ow. et ben.* ii. 97, t. 120.—DC. *Prodr.* iii. 320.—ENDL. *Gen.* n. 5105.—*Paschanthus* BURCH. *Trav.* i. 543.—DC. *Prodr.* iii. 336.—ENDL. *Gen.* n. 5104.—*Clemanthus* KL. *Pet. Reis. Moss. Bot.* 143.—*Blepharanthus* SM. (ex ENDL.).

The andrœcium is isostemonous; and the stamens, inserted on the receptacle opposite to and within the sepals, sterile in the female flowers, are, in the male, formed of a free filament and a basifixed anther, elongate often tetragonal, mucronate at the summit, dehiscing by two lateral longitudinal furrows. The gynœcium, rudimentary in the male flower, inserted at the bottom of the receptacle, is composed of a free ovary supported by a restricted foot, generally short, and surmounted by three stylary branches, the upper extremity of which, enlarged by growth to a head, is covered with stigmatic papillæ. The ovary, one-celled, encloses three parietal placentas on which are inserted a variable number of anatropous ovules. The fruit is dry, ordinarily dehiscing in three pannels on the margins of which are inserted the seeds; it is sometimes indehiscent, and the seeds, arillate like those of the Passion-flowers, scrobiculate, enclose a fleshy albumen with foliaceous cotyledons.

A separate genus, under the name of *Ophiocaulon*,[1] has been made of *Modecca lobata* and *cynanchifolia*, African species, the sepals of which are more deeply separated and the crown less developed than in *Modecca* proper, and a genus *Keramanthus*[2] for a *Modecca*, herbaceous not climbing, of Zanzibar, the calyx of which is gamosepalous to a large extent, and the fruit remains indehiscent. With us they can be only sections of the genus *Modecca*,[3] which are herbs or shrubs, often glabrous, climbing or furnished with simple or ramified tendrils, comparable to those of the Passion-flowers. The flowers[4] are axillar, solitary, or in cymes more or less compound. About thirty-five species are enumerated,[5] inhabitants of Asia, Australia and tropical Africa.

Machadoa is a genus closely allied to *Modecca*, having hermaphrodite flowers, without collarette, and represented by a small erect herb of Angola, with a large taproot and narrow leaves of which the short clusters of flowers occupy the axil. *Atheranthera*, a small climbing herb from the same country, of which the male flowers only are known, has five unequally distant sepals, five unequal petals, five stamens with a connective terminating in a point and five staminodes surrounding a rudimentary gynœcium. The inflorescence is said to be paniculate.

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[1] Hook. f. *Gen.* 813, n. 13.

[2] Hook. f. *Bot. Mag.* t. 6721.

[3] *Modecca*, sect. 3:
  1. *Eumodecca*.
  2. *Ophiocaulon*.
  3. *Keramanthus*.

[4] Often small, white, yellow, greenish or

[5] Harv. and Sond. *Fl. cap.* ii. 499.—Harv. *Thes. cap.* i. t. 12; ii. t. 167.—Tul. *Ann. sc. nat.* sér. 4, vii. 51.—Mast. *Oliv. Fl. trop. Afr.* ii. 512; 517 (*Ophiocaulon*); *Hook. f. Fl. brit. Ind.* ii. 601.—Oliv. *Hook. Icon.* t. 1317.—Walp. *Rep.* ii. 222; v. 774; *Ann.* ii. 654.

III. ACHARIA SERIES.

Acharia[1] (fig. 329-335) has monœcious and regular flowers. The receptacle is in the form of a shallow cup and bears externally three or four narrow sepals not contiguous, within this a gamopetalous bell-shaped corolla divided above into three or four alternisepalous lobes, ciliate at the margins. The stamens, alternate with the divisions of the corolla and the same in number, have a filament free, except quite at the base, and an introrse

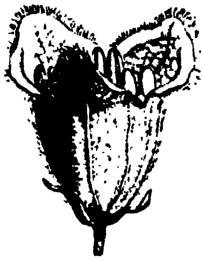

Fig. 329. Male flower ($\frac{2}{1}$).

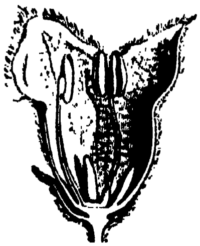

Fig. 330. Long. sect. of male flower.

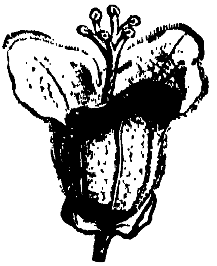

Fig. 331. Female flower.

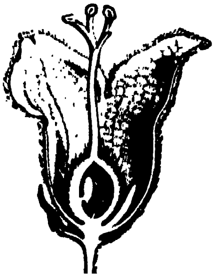

Fig. 332. Long. sect. of female flower.

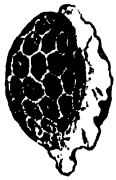

Fig. 334. Seed ($\frac{3}{1}$).

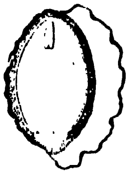

Fig. 335. Long. sect. of seed.

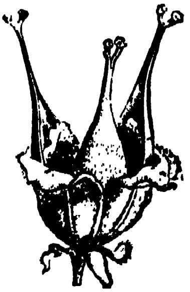

Fig. 333. Dehiscent fruit.

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[1] THUNB. *Prodr. Fl. cap.* 14, c. icon.; *Fl.* n. 5107.—PAYER, *Fam. nat.* 115.—B. H. *Gen.* *cap.* 37.—LINDL. *Veg. Kingd.* 322.—ENDL. *Gen.* i. 814, n. 15.

anther, with two cells partly independent and dehiscing by two longitudinal clefts. In the intervals between the stamens are an equal number of elongate conical glands.[1] The female flowers have the same perianth and disk as the males; but there is no trace of an andrœcium, and the bottom of the receptacle bears a free gynœcium, formed of a one-celled ovary surmounted by an erect style, divided above into three branches, these subdivided into two secondary branches, the dilated extremities of which are covered with stigmatic papillæ. Each placenta, alternate with the divisions of the corolla, bears most frequently two ascending anatropous ovules, with micropyle directed downwards and inwards. The fruit, around which persists the perianth, is a capsule opening longitudinally in three pannels, each surmounted by a third of the style divided and hardened. The seeds, few, enclose under their integuments, the outer[2] of which is dilated in an aliform aril of the raphe, a fleshy albumen, enveloping a small axile apical embryo. *Acharia tragioides*[3] is a slender undershrub with yellow subherbaceous branches, from South Africa; the leaves are alternate, petiolate, trilobed, divided in large saw-

Ceratosicyos Ecklonii.

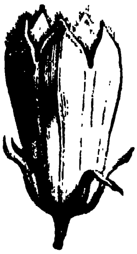

Fig. 336. Male flower.

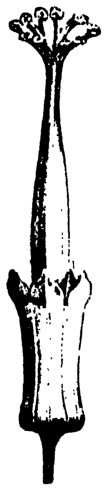

Fig. 338. Female flower.

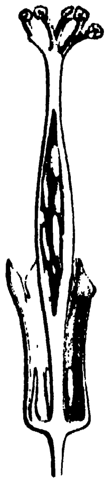

Fig. 339. Long. sect. of female flower.

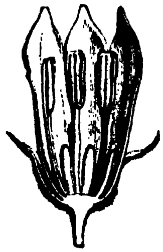

Fig. 337. Long. sect. of male flower.

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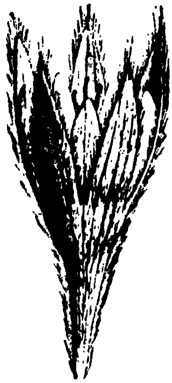
[1] More or less adnate to the petals.

[2] Scrobiculate like that of the Passifloras.

[3] THUNB. *loc. cit.*—HARV. *Ann. Nat. Hist.* ser. 1, iii. 420, t. 9; *Fl. cap.* ii. 502.

number of anatropous, more or less oblique ovules. The fruit is a capsule enclosed in the persistent receptacle and perianth, and opening from the summit in three valves alternate with the placentas. The seeds, furnished with a little-developed aril from the

Malesherbia (Gynopleura) rugosa.


311. Flower.

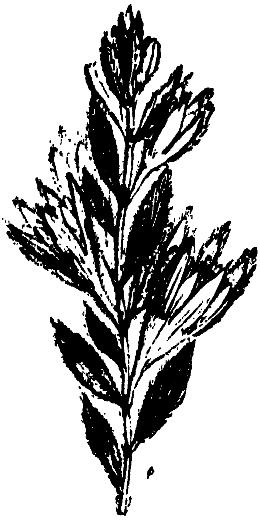


Fig. 310. Flowering branch.

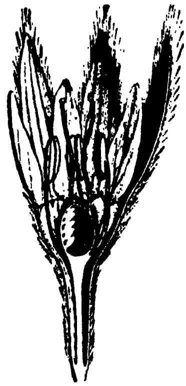


Fig. 342. Long. sect. of flower.

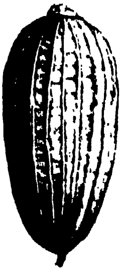


Fig. 344. Seed.

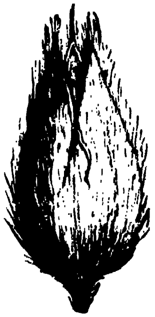


Fig. 343. Fruit surrounded

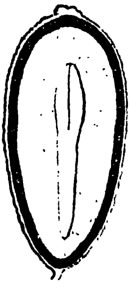


Fig. 345. Long. sect. of

chalazic region, are elongate, externally impressed with a salient network or sort of trellis. They enclose, in a fleshy albumen, a straight axile embryo, with a rather long cylindro-conical descending radicle, and oval or orbicular cotyledons.

Under the generic name of *Gynopleura* Cav., have been distinguished some Chilian forms of *Malesherbia* in which the petals may be equal to the sepals, not unfrequently narrower; the calyx oftener assumes a campanulate or turbinate form, and the flowers are grouped in ramified or fasciculate inflorescences. The nine species known of *Malesherbia* thus defined are Peruvian and Chilian.

Limited as we have just seen, this family forms a small group by concatenation. A.-L. de Jussieu established it in 1805, under the name of Passifloreæ.[1] Lindley, who gave it the name of Passifloraceæ,[2] included in it only the genera of our Passion-flower series then known and *Ryania* of Vahl. The Modecceæ were ranged by him, as by many others, among the Papayaceæ, and included the genera *Acharia* and *Ceratosicyos*. Of the Malesherbiaceæ Don, in 1826, made a separate family which, two years later, De Candolle included in the Passifloreæ. Now the 17 genera constituting the group and comprising about 260 species, are distributed in four series:

1. Passifloreæ.—Flowers hermaphrodite, with cupular receptacle, bearing at its margin, besides the perianth, simple or double, one or more crowns (disks). Gynœceum sessile or stipitate. Style simple or 3–5-branched. Seeds ordinarily rather flattened.—11 genera.

2. Modecceæ.—Flowers hermaphrodite or unisexual. Corolla little developed generally enclosed. Disk continuous, with five glands, or nil. Corolla reduced to 5 parts, or sometimes nil. Anthers often apiculate.—3 genera.

3. Acharieæ.[3]—Flowers unisexual, with a perianth often double, regular or rarely irregular, or asepalous. Corolla developed relatively to the calyx. Stamens inserted near the throat or at the bottom.—2 genera.

4. Malesherbieæ.[4]—Flowers hermaphrodite, with an elongate

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[1] *Ann. Mus.* vi. 102; *Dict. sc. nat.* xxxviii. 48.—DC. *Prodr.* iii. 321.—Endl. *Gen.* 924, Ord. 197.—B. H. *Gen.* i. 807, Ord. 74.—*Passifloraceæ* Lindl. *Veg. Kingd.* 332, Ord. 113.

[2] *Gen.* 927 (*Passiflorearum* Trib. 3).

[3] Payer, *Fam. nat.* 115, Fam. 53.

[4] DC. *Prodr.* iii. 337.—Payer, *loc. cit.* 90, Fam. 36.—*Malesherbiaceæ* Don, *James Journ.* (1826), 321.—Lindl. *Veg. Kingd.* 335, Ord. 114.—Endl. *Gen.* 928, Ord. 198.

We know not if it is possible to preserve a distinct genus *Crossostema* (Pl. *Hook. Niger Fl.* 364.—B. H. *Gen.* 813, n. 11), a climbing shrub of Sierra-Leone, very imperfectly described, placed near *Barteria* and distinguished by its isostemonous andrœcium and its stigma of small size. (See Mast. *Oliv. Fl. trop. Afr.* ii. 511.—Walp. *Ann.* ii. 653.)

perianth tube, regular or a little irregular. Petals membranous. Crown thin and membranous. Stamens inserted on the foot of the gynœcium. Styles 3, distant from the base. Seeds oblong.—1 genus.

The closest affinities of the Passifloraceæ not climbing are doubtless with *Ryania*, referred, perhaps wrongly, to the Bixaceæ, and which LINDLEY ranged among the Passifloraceæ. A.-L. DE JUSSIEU, in 1789, described *Passiflora*, *Murucuia* and *Tacsonia* as Genera allied to the Cucurbitaceæ, distinguished chiefly by their superior ovary; and it may now be said, especially with a knowledge of *Acharia* and *Ceratosicyos*, that the Passifloraceæ represent Cucurbitaceæ with a superior ovary. Of *Carica*, placed in the same group, the affinities with the Passifloraceæ are great, like those of *Ryania*; but we cannot separate them from the Pangieæ. Two other types, equally near the Passifloraceæ, are those of the Begoniaceæ and Moringeæ; we hardly now hesitate to consider them as a series of Passifloraceæ with a flower a little irregular, an elongate capsular fruit and exalbuminous seeds.

The geographical distribution of the Passifloraceæ is very complicated. The Malesherbieæ are all American, and the Acharieæ belong all to southern or south-western Africa. The Modecceæ are African, Asiatic and Oceanic. The Passion-flowers inhabit all tropical regions; but Africa (including Madagascar) alone possesses *Deidamia*, *Barteria*, *Hounea*, *Triphostemma*, *Physena*, *Soyauxia* and *Paropsia* (including *Smeathmannia*) except a Malay species. *Dilkea* and *Mitostemma* belong exclusively to tropical America, where they connect the Passion-flowers with *Barteria* and *Soyauxia*, of which they are the analogues in the New World.

PROPERTIES.—The useful or noxious species belong chiefly to the genus *Passiflora*.[1] *P. cærulea* L.[2] (fig. 317–320) has an edible fruit, refreshing, febrifuge, which sometimes ripens in our gardens and resembles an egg of an orange colour. Beverages and an agreeable syrup are prepared from it. The same is the case with many others: *P. coccinea* Aubl., the pulp of which is gelatinous; *P. alata* Ait., the pulp of which is rather sour; *P. fœtida* L., the flesh of which is not abundant; *P. ornata* K., from tropical America, *P. quadrangularis* L., or *Barbadine*; *P. ligularis* J., the fruit of which is the size of a citron and its taste rather acrid; *P. laurifolia* L., or Water Lemon of the Antilles, the fruit of which is filled with an aromatic pulp which is sucked from a hole made in the parchment-like wall of the pericarp; *P. lyræfolia* Tuss., from Jamaica, the pulp of which is extolled as refreshing, aperitive, useful in maladies of the liver and stomach, fevers, melancholy, skin diseases, and to excite urinary secretion; *P. maliformis* L., or Sweet Calabash, with edible refreshing berries; *P. Murucuja* L., used for the same purposes in southern Brazil; *P. tinifolia* J., which has the same use in Cayenne; *P. Lowei* Heer, introduced into the Canaries from S. America, the berries of which are equally edible, as are those of *P. pallida* L., *lutea* L., *rubra* L., *serratifolia* L., *serratistipula* DC., *tiliæfolia* L., *albida* Ker, *Sururuca* Vellos., *filamentosa* L., *palmata* Lodd., *Pisonis* Kost., *serrata* L., *pedata* L., &c. The roots and leaves of many species have various properties. Thus we know, from the time of Marcgraff and Pison, who wrote in the middle of the eighteenth century, that in Brazil many Passifloras had leaves reputed diuretic, aperitive, vermifuge, and that they were applied to hemorrhoids, contused wounds, &c. *P. laurifolia* L. is used in the treatment of helminthiasis; it is also a useful bitter. The leaves of *P. fœtida* L., *hircina* Sweet and *hibiscifolia* Lamk are accounted antihysteric and emmenagogic. *P. Murucuja* L. (*Murucuia ocellata* Pers.) is equally famed as an antihysteric. *P. serrata* L. is antiscorbutic; its leaves are prescribed for angina in the Antilles. In Mexico *P. Contrayerva* Sm. is reputed to cure the bites of venomous serpents, and, in central America, *P. normalis* W. bears specially the name of *Contrayerva*. In Jamaica, *P. rubra*, a narcotic, is used as opium. Its tincture there bears the name of *Dutch laudanum*. *P. capsularis* L. is an emmenagogue in Guiana, and *P. coccinea* Aubl. and *maliformis* L. are recommended in intermittent fevers. Nothing, then, is so variable as the properties[1] of the species of this genus.[2] Further, *P. quadrangularis* L., or *Barbadine*, is a very dangerous plant. Its fresh root is extremely poisonous; it is used as an emetic in Bourbon, and it has been recommended, doubtfully, as a tenicide. The species of the section *Tacsonia* which have received the names of *T. mollissima* H. B. K., *bilobata* SPRENG., *speciosa* H. B. K., and *tripartita* BREIT., all American, have an edible pericarp, and from their arillate seeds beverages are prepared. In Madagascar the fruit of *Paropsia edulis* DUP.-TH. (fig. 323-325) is eaten. A great number of Passifloras are cultivated as ornamental plants.[3] The most beautiful belong generally to the section *Tacsonia*.

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[1] H. BN, *Dict. encycl. sc. méd.* sér. 2, xxi. 502.—ENDL. *Enchirid.* 483.

[2] *Amœn. acad.* i. 231, t. 10, fig. 20.—DC. *Prodr.* iii. 330, n. 102.—*Bot. Mag.* t. 28.—ROSENTH. *Syn. pl. diaphor.* 667 (Passion-flower).

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[1] HELLMANN, *de Passiflora* (Upsal. 1745).

[2] See RICORD-MADIANA, *Hist. Nat. et tox. de la Barbadine quadrangulaire* (*Journ. de Pharm.* xvii. 465, 536, 581; *Rech. et expér. sur les propr. méd. de quelques* Passiflora (*Ann. Nat. Hist. N. York*, 1).

[3] See MAST. *A classified List of Passifloræ.*

GENERA.

I. PASSIFLORÆ.

1. **Passiflora** L.—Flowers hermaphrodite or more rarely 1-sexual, regular, 4–5-merous; receptacle cupular or more rarely (*Tacsonia*) tubular. Sepals oblong or linear, sometimes externally apiculate below apex, often coloured within, imbricate. Petals as many or 0, alternate, imbricate. Stamens 4, 5, alternipetalous, inserted at the top of the gynophore or a little lower (*Tetrastylis*); filaments finally patulous acutate; anthers dorsifixed, introrse, 2-rimose, versatile. Gynophore thick urceolate and girt with 1–3 coloured disks (crowns), membrano-tubular or oftener divided into numerous linear filaments. Ovary, at top of gynophore, 1-celled, perforated at apex and around this acropyle more or less papillose; styles 3, 4, oftener clavate and papillose at capitate apex. Placentas 3, 4, parietal; ovules few or ∞, anatropous. Fruit baccate, pulpy or nearly dry, indehiscent or scarcely 3-valved. Seeds ∞, arillate, often scrobiculate without; albumen fleshy; cotyledons of straight embryo foliaceous.—Herbs or shrubs, erect or generally climbing; leaves alternate or rarely opposite, entire, dentate, lobed or partite; petiole often glandular; tendrils axillar or lateral undivided or 0; stipules various or 0. Flowers axillar or at base of tendril solitary or 2-nate, sometimes, from leaves being reduced to bracts, racemose; peduncles articulate, oftener 3-bracteate; bracts free or connate. (*Trop. America, East. African Islands, Oceania*).—See p. 469.

2. **Deidamia** Dup.-Th.[1]—Flowers hermaphrodite; receptacle short cupular. Sepals 4, 5, imbricate. Petals 4, 5, alternate,

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[1] *Hist. vég. isl. Afr. austr.* 61, t. 20.—DC. *Prodr.* iii. 337.—Meissn. *Gen.* 124 (90).—Endl. *Gen.* n. 5097.—Payer, *Fam. nat.* 89.—B. H. *Gen.* i. 811, n. 5.—*Thompsonia* R. Br. *T. Linn. Soc.* xiii. 221.—Endl. *Gen.* n. 5096.

thinner, imbricate. Disk duplex; interior cupular; exterior consisting of ∞ unequal filaments inserted with perianth, 1-seriate. Stamens 5–8, either continuous with interior of disk, or interior to it; filaments dilated at base; anthers introrse dorsifixed versatile, 2-rimose. Ovary more or less stipitate, 1-celled; style erect, divided at apex into 3–6 rather thick reflexed lobes. Placentas 3–6 parietal; ovules ∞, ascending. "Fruit ovoid subcrustaceous, 3–4-valvate. Seeds ∞, funiculate; aril fleshy; outer integument crustaceous scrobiculate; cotyledons of albuminous embryo foliaceous."—Glabrous climbing shrubs; leaves alternate unequally pinnate or decompound below; lower folioles 2-nate on both sides; flowers in axillar or terminal racemiform cymes. (*Madagascar.*[1])

3. **Paropsia** NOR.[2]—Flowers nearly of *Deidamia*; receptacle shortly cupular. Sepals 4, 5, and petals the same, imbricate. Stamens 5 (*Euparopsia*), or 10 (*Diploparopsia*[3]) or sometimes 20 (*Smeathmannia*[4]); filaments inserted on short or very short gynophore; stamens otherwise free; anthers ovate or oblong. Ovary 1-celled; style branches 2–5, narrow or dilated at stigmatose apex. Placentas 2–5, parietal, ∞-ovulate. Fruit coriaceous or subvesiculate, oftener 3-valved. Seeds ∞, compressed; aril small; external coat crustaceous scrobiculate;[5] albumen fleshy rather thick or thin; cotyledons of axile embryo foliaceous.—Trees or shrubs; variously clothed, often sericeous; leaves alternate ovately or obovately oblong serrate; flowers[6] axillar solitary or cymose 2–∞, bracteolate. (*Trop. west. Africa*, A

4. **Dilkea** MAST.—Flowers nearly of *Passiflora*, 4–8-merous. Crown emerging from middle of tube 3–4-plex; filaments of each series unequal. Stamens to 8, hypogynous; filaments 1-adelphous

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[1] Spec. 4, 5. TUL. *Ann. sc. nat.* sér. 4, viii. 47; 51 (*Thompsonia*).—M. MAST. *Journ. Bot.* [1875], t. 163.

[2] Ex DUP.-TH. *Hist. vég. isl. Afr. austr.* 59, t. 19.—DC. *Prodr.* iii. 322.—ENDL. *Gen.* n. 5095.—B. H. *Gen.* i. 812, n. 8.—H. BN, *Bull. Soc. Linn. Par.* 303. *Trichodia* GRIFF. *Notul.* iv. 570.

[3] H. BN, *loc. cit.* 304.

[4] SOLAND. ex R. BR. *Tuck. Congo*, 439; *Trans. Linn. Soc.* xiii. 220.—ENDL. *Gen.* n. 5094.—DC. *Prodr.* iii. 322.—B. H. *Gen.* i. 812, n. 9.—*Bulowia* SCHUM. et THÖNN. *Beskr. Guin.* 246.

[5] "Aril short cupular or 0."

[6] Rather large or small, white or yellow.

[7] Spec. about 10. TUL. *Ann. sc. nat.* sér. 4, viii. 45.—M. MAST. *Hook. f. Fl. trop. Afr.* ii. 585; 506 (*Smeathmannia*).—OLIV. *Journ. Linn. Soc.* viii. 161.—*Bot. Mag.* t. 4194, 4364 (*Smeathmannia*).

[8] *Contrib. Passifl. Trans. Linn. Soc.* xxvii. 627.

at base.[1] Ovary shortly stipitate; placentas 4, ∞-ovulate; style branches 4, reniform at stigmatose apex. Fruit coriaceous; ovules, seeds, &c., of *Passiflora*.—Trees or climbing shrubs without tendrils (?); leaves alternate or subopposite entire; glomerules axillar sessile or pedunculate aggregate;[2] bracts small subulate. (*Trop. Brazil.*[3])

5. **Mitostemma** MAST.[4]—Flowers nearly of *Deidamia* (or *Paropsia*), 4–5-merous; sepals imbricate and petals same in number alternate, thinner, imbricate. Crown 2-seriate, of ∞ filaments. Stamens 8–10; filaments free or coherent compressed; anthers introrse; cells free below. Ovary shortly stipitate, 1-celled; styles 4, 5, slender, apex large stigmatose reniform-capitate; placentas 4, 5, parietal. Ovules in each few (often 2). Fruit . . . ?—A tree or shrub; leaves alternate oblong coriaceous, shortly petiolate; flowers[5] racemose; bracts setaceous. (*Brazil.*[6])

6. **Barteria** HOOK. F.[7]—Flowers 5-merous; receptacle shortly cupular disciform crenate. Sepals 5, imbricate. Petals 5, alternate, imbricate. Crown duplex; exterior membranaceous ciliately fimbriate; interior short thick crenate. Stamens ∞, interior to crown, scarcely perigynous; filaments connate at dilated base; anthers introrse; cells of exterior not contiguous. Ovary subglobose; placentas 5 parietal, oppositipetalous, or 3, 4, ∞-ovulate; style erect simple, conoid-capitate at stigmatose apex. Fruit coriaceous, indehiscent; seeds ∞, compressed scrobiculate.—Small trees or shrubs; ramules[8] marked on both sides with a rather prominent line descending from the leaf; leaves alternate coriaceous, entire or subserrate; flowers axillar or below axils, sometimes solitary, sometimes seriately inserted along the lines descending from the leaves; bracts ∞, coriaceous, imbricate. (*Trop. west. Africa.*[9])

7. **Hounea** H. BN.[10]—Flowers 5-merous; receptacle shortly cupular. Sepals 5, coriaceous, imbricate, externally velute. Petals 5, inserted alternately with sepals at margin of receptacle.

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[1] Inserted at bottom of column.

[2] Flowers said to be red.

[3] Spec. 3. MAST. *Mart. Fl. bras.* xiii. 533, t. 106.

[4] *Trim. Journ. Bot.* (1883), 33.

[5] Moderate.

[6] Spec. 1. *M. Glaziovii* MAST.

[7] *Journ. Linn. Soc.* v. 14, t. 2; *Gen.* i. 812, n. 10.

[8] Sometimes fistular.

[9] Spec. 2. MAST. *Oliv. Fl. trop. Afr.* ii. 510.

[10] *Bull. Soc. Linn. Par.* 301.

Disk inserted with perianth shortly crown-like, ∞-setose; setæ slender erect densely hirsute. Stamens 5, inserted with the ovary at the top of a short podogyn; filaments free compressed; anthers . . . ? Placentas 5, parietal, ∞-ovulate. Fruit baccate globose[1] densely velvety hirsute; pericarp subcoriaceous; seeds shortly arillate.—A moderate-sized tree;[2] trunk undivided bare; sprout apical; twigs with densely fuscate-hirsute innovations; leaves remotely alternate, oblong, unequally cuneate at base, at obtuse apex produced in a deciduous point; flowers in a compound loosely cymiferous terminal raceme; leaves of lateral branches axillar raised with them. (*North Madagascar.*[3])

8. **Soyauxia** Oliv.[4]—Flowers hermaphrodite, 5–6-merous; receptacle shortly cupular. Sepals and petals imbricate. Stamens ∞, inserted with perianth at margin of receptacle; filaments filiform corrugate; anthers small rotundately-quadrate, 2-celled, sub-4-locellate. Crown very short disk-like denticulate. Ovary[5] 1-celled, truncate; placentas 3, rather prominent. Ovules 6, in pairs at top of placentas descending; micropyle extrorsely superior. Styles 3, excentric, free diverging from base, corrugate in the bud, not dilated at stigmatose apex. Fruit . . . ?—A small tree; leaves alternate shortly petiolate oblong stipulate; flowers[6] in axillar spikes oftener 2-nate and shorter than leaf. (*Gaboon.*[7])

9. **Tryphostemma** Harv.[8]—"Flowers hermaphrodite, 6-merous, sepals very unequal, imbricate; the interior perceptibly narrower and more membranous. Crown duplex; the outer membranous fimbriate; the inner annular crenate. Stamens 5; filaments adnate to inner crown at base, afterwards free; anthers sagittate. Ovary short; styles 3, 4, capitate at apex. Ovules few affixed to 3, 4 parietal placentas. Capsule shortly stipitate, 3–4-valvate; seeds few compressed arillate.—A small branched shrub; leaves alternate, ovate, ciliately dentate; stipules subulate; flowers[9] axillar, 2–3-nate, pedicellate."[10] (*Natal.*[11])

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[1] Size of a walnut.

[2] About 25 ft.

[3] Spec. 1. *H. madagascariensis* H. Bn.

[4] *Hook. Icon.* t. 1395.

[5] Inferior quite at base.

[6] Small.

[7] Spec. 1. *S. gabonensis* Oliv.

[8] *Thes. cap.* i. 32, t. 51.—B. H. *Gen.* i. 811, n. 6.

[9] Greenish, punctulate, small.

[10] Char. from Harvey's figure. Genus now doubtfully referred to the following.

[11] Spec. 2, quite unknown to us. Mast. *Oliv. Fl. trop. Afr.* ii. 508.

10. **Basananthe** Peyr.[1]—Flowers nearly of *Tryphostemma*, 5-merous; inner folioles of imbricate calyx narrower and more membranous. Petals 5, linear. Crown duplex; the outer membranous filamentous; the inner shorter applied to andrœcium. Stamens 5, subhypogynous; anthers linear introrse. Ovary free; styles 3, free subulate, not or slightly capitellate. Placentas 3, 1-ovulate; funicles rather long. "Seeds exarillate compressed scrobiculate, hence marginate; funicle thick curved."—Small shrubs or herbs;[2] leaves alternate serrate; stipules subulate; flowers[3] axillar pedunculate, 3-bracteate.[4] (*South. Guinea.*[5])

11. **Physena** Noronh.[6]—Flowers 1-sexual; male calyx of 6–9 minute folioles, imbricate. Stamens 8–15; filaments short erect; anthers linear basifixed exserted introrse; cells 2, rimose. Ovary rudimentary, 2-celled;[7] styles 2. Female perianth as male. Staminodes minute or 0. Ovary 1-celled; placentas 2 parietal, few-ovulate; styles 2 filiform. Fruit dry, parchment-like or coriaceous; seed 1, thick, subbasal, exalbuminous; embryo thick fleshy; radicle very small.—Erect or climbing shrubs; leaves alternate articulate entire; flowers[2] in slender compound axillar racemes. (*Madagascar.*[8])

II. MODECCEÆ.

12. **Modecca** Lamk.—Flowers 1-sexual; male receptacle cupular. Calyx tubular, campanulate, turbinate or ventricose; lobes 4, 5, more or less deep, imbricate; interior generally thinner and more membranous and margins open fimbriate. Petals 4, 5, inserted with calyx, enclosed, oftener narrower, short, unequally fimbriate or subentire. Disk inserted at margin of receptacle, oftener short, obtusely lobed or more rarely produced in a small

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[1] *Welw. et Peyr. Sert. benguel.* 29.—B. H. *Gen.* i. 812, n. 7.

[2] Twigs sometimes passing into branched glanduliferous hairs.

[3] White, small.

[4] A genus very near the preceding, of which perhaps a sect.; but type unknown to us.

[5] Spec. 2. Welw. *Trans. Linn. Soc.* xxvii. 28, t. 9.—Mast. *Trans. Linn. Soc.* xxvii. 639; *Oliv. Fl. trop. Afr.* ii. 509.

[6] Ex Dup.-Th. *Gen. nov. madag.* 6.—Endl. *Gen.* n. 6851.—B. H. *Gen.* i. 815, n. 19.

[7] Minute, greenish; anthers red.

[8] Spec. 2, 3, one of which we know to be cultivated. Tul. *Ann. sc. nat.* sér. 4, viii. 53.

sometimes involute fimbriate crown. Stamens 4, 5, alternipetalous, interior to disk; filaments free or subconnate at dilated base; anthers basifixed or linear, introrse, 2-rimose, sometimes apiculate. Ovary rudimentary small. Female perianth and disk nearly as male. Staminodes 4, 5, alternipetalous. Ovary shortly or very shortly stipitate, 1-celled; style branches 3, variously dilated at stigmatose apex. Placentas 3, parietal, alternating with styles, ∞-ovulate. Fruit coriaceous, chartaceous or fleshy, 3-valved or sometimes indehiscent. Seeds ∞, arillate scrobiculate; albumen fleshy; cotyledons of axile embryo foliaceous.—Erect (*Keramanthus*) or oftener twining herbs, or climbing shrubs; leaves alternate, entire, dentate, lobed or pinnatifid; stipules small or 0; petiole 2-glandular at apex; tendrils various or 0; flowers axillar; peduncles sometimes cirrhose. (*Asia, east. cont. and ins. Africa, trop. Australia.*)—See p. 475.

13. **Machadoa** Welw.[1]—Flowers hermaphrodite (nearly of *Modecca*); calyx funnel-shaped campanulate, 5-lobed, imbricate. Petals 5, enclosed ligulate denticulate. Stamens 5, subhypogynous; anthers linear. Ovary shortly stipitate; placentas 3, ∞-ovulate; style short, capitate 3-lobed at apex. Fruit capsular, pendulous from calyx, 3-sulcate. Seeds ∞, compressed, scrobiculate, &c., of *Modecca*.—A small erect sparsely branched herb; root fusiform; leaves alternate lanceolate entire; stipules small; flowers small axillar racemose-cymose few, articulate; bracts subulate.

14. **Atheranthera** Mast.[3]—"Flowers 1-sexual; sepals of male calyx 5, equal, at first equi-distant; afterwards, from inequality of petals, 2 removed from the rest. Petals 5, concave, finally unequal, imbricate. Crown 0. Stamens 10, 5 sterile, coherent at base and adnate to petals; filaments flat liguliform, 1-celled, at first introrse, finally, by contortion of the filaments, extrorse, longitudinally 1-rimose. Ovary rudimentary minute.—A climbing cirrhate herb; leaves alternate petiolate ovate-acute cordate widely dentate, exstipulate; flowers paniculate." (*Angola.*[4])

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[1] *Trans. Linn. Soc.* xxvii. 29, t. 10.—B. H. *Gen.* i. 814, n. 14.

[2] Spec. 1. *M. huillensis* Welw.—Mast. *Oliv. Fl. trop. Afr.* ii. 520.

[3] *Trans. Linn. Soc.* xxvii. 640, c. ic.

[4] Spec. 1, unknown to us. *A. paniculata* Mast. *Oliv. Fl. trop. Afr.* ii. 519.—*A. Welwitschii* Mast. *Trans. Linn. Soc. loc. cit.*

III. ACHARIEÆ.

15. **Acharia** Thunb.—Flowers monœcious; receptacle cupular, bearing perianth at margin. Sepals 3, or more rarely 4, small recurved. Corolla gamopetalous campanulate, 3–4-lobed. Stamens 3, 4, alternate with lobes of corolla; filaments adnate to corolla at base, otherwise free; cells of basifixed anther 2, nearly free, introrsely rimose. Glandules (?) 3–4, opposite corolla lobes. Female perianth as male, growing after florentation. Ovary subsessile, 1-celled; branches of 3–4-fid style stigmatose oppositipetalous, 2-lobed at apex. Ovules on 3, 4, parietal placentas, oftener 2; micropyle introrsely inferior. Fruit enclosed by corolla, coriaceous capsular; valves 3, 4; each terminated at attenuated apex by 2-lobed style branch. Seeds 1–4, subovoid scrobiculate; raphe arillate; cotyledons of short richly albuminous embryo orbicular.—An erect subherbaceous shrublet; leaves alternate petiolate serrate, 3-lobed; flowers axillar solitary or 2-nate shortly pedunculate nutant. (*S. Africa.*)—See p. 477.

16. **Ceratosicyos** Nees.[1] — Flowers monœcious (nearly of *Acharia*) 5-merous; sepals of male calyx 5, linear free. Lobes of campanulate corolla 5. Stamens 5, alternate with corolla lobes. Female flower asepalous; corolla nearly as male, longer, persistent. Ovary stipitate elongate; placentas 4, 5, parietal, few-ovulate; ovules pendulous from ascending funicles; raphe extrorse. Fruit capsular siliquiform, 4–5-valved; seeds angularly subglobose albuminous, fleshy without.—A slender twining[2] herb; leaves alternate, palmately 3–7-lobed serrate, exstipulate; male flowers[3] racemose; pedicels very slender; female solitary. (*S. Africa.*[4])

IV. MALESHERBIEÆ.

17. **Malesherbia** R. and Pav.—Flowers hermaphrodite regular; receptacle very various in form, straight or curved, either

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[1] *Eckl. et Zeyh. Enum.* 281.—Endl. *Gen.* n. 5106.—Payer, *Fam. nat.* 116.—B. H. *Gen.* 814, n. 16.

[2] Habit of *Cucurbitaceæ.*

[3] Greenish, very small.

[4] Spec. 1, native of the Cape, Natal and Caffrarian woods. *C. Ecklonii* Nees.—Harv. *Ann. Nat. Hist.* ser. 1, iii. 421, t. 10; *Fl. cap.* ii. 501.—*Modecca septemloba* E. Mey. exs. *Drège.*

tubular, or (*Gynopleura*) subcampanulate or turbinate. Sepals 5, inserted at margin of receptacle. Petals 5, inserted with calyx, equal to, larger or (*Eumalesherbia*) smaller than sepals. Stamens 5, alternipetalous, inserted under ovary at top of the stem of gynœcium; filaments free; anthers oblong introrse, 2-rimose. Ovary sessile at top of erect gynophore, 1-celled; styles 3, lateral, remote at base, filiform, capitate or clavate at stigmatose apex. Placentas 3, 4, parietal, alternate with styles, ∞-ovulate; ovules oblique anatropous. Fruit capsular enclosed by perianth membranous, 3–4-valved at apex. Seeds ∞, with an external interstitial covering, spongily arillate to chalaza; albumen copious fleshy; cotyledons of axile embryo orbicular.—Erect herbs or undershrubs; variously clothed; leaves alternate, entire, sinuate, serrulate or pinnatifid, exstipulate; flowers in bracteate columnar (*Eumalesherbia*) or compound cymiferous (*Gynopleura*) racemes. (*Peru, Chili.*)—See p. 479.

LXXI. BEGONIACEÆ.

Begonia[1] (fig. 346-353), which has given name to this small family, has unisexual flowers. The males have most frequently, on a convex receptacle, a petaloid perianth, formed of four folioles; two exterior broader and valvate, and two narrower alternating

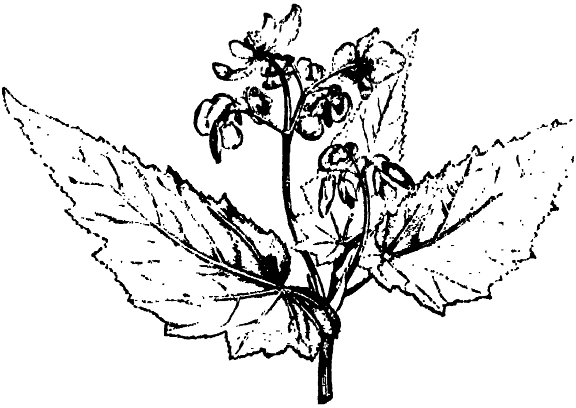

Fig. 346. Flowering branch.

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[1] Plum. *Cat. pl. amer.* 20.—T. *Inst.* 660, t. 442.—L. *Gen.* n. 1156.—Endl. *Gen.* n. 5153.—Payer, *Organog.* 436, t. 92.—Kl. *Abh. Akad. Wiss. Berl.* (1854).—H. Bn, *Payer Fam. nat.* 380.—A. DC. *Ann. sc. nat.* sér. 4, xi. 119; *Prodr.* xv. p. i. 278.—B. H. *Gen.* i. 841, n. 1.—*Eupetalum* Lindl. *Introd.* ed. 2, 440.—*Platy-* Henfr. *Lindl. et Paxt. Mag.* i. 156.—*Casparya* Kl.—A. DC. *Prodr.* xv. p. i. 269—*Sphenanthera* Hassk. *Bot. Zeit.* (1857), 180.—*Stibadotheca* Kl. *loc. cit.* 128, t. 12 (part.).—*Isopteryx* Kl.—A. DC. *Prodr.* 270.—*Sassea* Kl.—A. DC. *Prodr.* 272.—*Augustia* Kl. *Begon.*—*Barya* Kl.—*Cyathocnemis* Kl.—*Donaldia* Kl.—*Doratometra* Kl.—*Ewaldia* Kl.—*Gaerdtia* Kl.—*Gireoudia* Kl.—*Gurltia* Kl.—*Haagea* Kl.—*Huszia* Kl.—*Knesebeckia* Kl.—*Lauchea* Kl.—*Lepsia* Kl.—*Magnusia* Kl.—*Mitscherlichia* Kl.—*Moschkowitzia* Kl.—*Nephromiscus* Kl.—*Petermannia* Kl.—*Pilderia* Kl.—*Platycentrum* Kl.—*Pritzelia* Kl.—*Putzeysia* Kl.—*Rachia* Kl.—*Reichenheimia* Kl.—*Rossmania* Kl.—*Saueria* Kl.—*Scheidweileria* Kl.—*Steineria* Kl.—*Riessia* Kl.—*Tittelbachia* Kl.—*Trachelanthus* Kl.—*Trachelocarpus* C. Muell.— *gia* Kl.—*Wageneria* Kl.—*Weilbachia* Kl.—*Æthiopteryx* A. DC.—*Diploclinium* Wight.—*Dysomorphia* A. DC.—*Dasystyles* A. DC.—*Eriminea* A. DC.—*Filicibegonia* A. DC.—*Loasibegonia* A. DC.—*Latistigma* A. DC.—*Muscibegonia* A. DC.—*Monophyllum* A. DC.—*Miconanthera* A. DC.—*Podandra* A. DC.—*Polyschisma* A. DC.—*Parvibegonia* A. DC.—*Philippomartia* A. DC.—*Plurilobaria* A. DC.—

with the former. The andrœcium is composed of an indefinite number of stamens, some of which may be sterile; each is formed of a filament and a basifixed elongate and flattened anther the margin of each of which bears a linear cell dehiscing longitudinally by a cleft nearly marginal.[1] The filaments are free or united below in a longer or shorter column, which appears to depend upon the receptacle. The female flower has a concave receptacle, enclosing an inferior ovary and bearing on its margin a perianth most frequently formed of five unequal, petaloid folioles, quincuncially imbricate. The ovary has three cells, complete or incomplete,

Begonia incarnata.

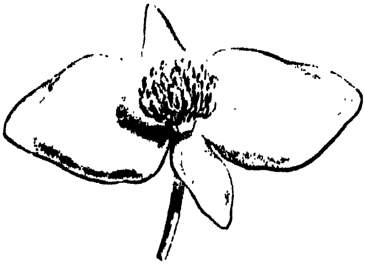

Fig. 347. Male flower ($\frac{3}{1}$).

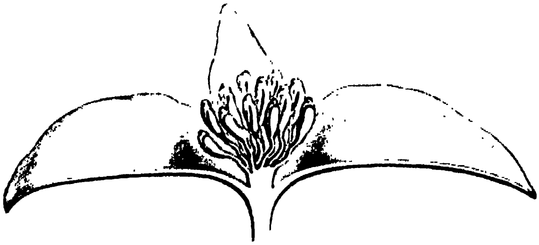

Fig. 348. Long. sect. of male flower.

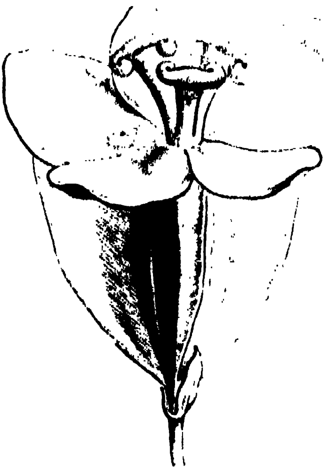

Fig. 349. Female flower ($\frac{3}{1}$).

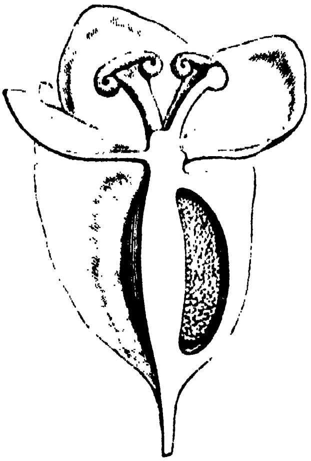

Fig. 350. Long. sect. of female flower.

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rcilia A. DC.—*Ruizopavonia* A. DC.—*Soleanthera* A. DC.—*Mezierea* Gaudich. *Voy.* onit. *Bot.* t. 32.—Kl. *Begon.* 67.—A. DC. . 406.—*Irma* Bout. (ex A. DC.).

[1] The pollen is ellipsoid, with three folds; in water it is ovoid, with three bands and papillæ. (H. Mohl, *Ann. sc. nat.* sér. 2, iii. 342.)

the dorsal line of which is more or less prominent and often attenuated in a vertical wing; the style is divided into three branches the stigmatiferous part of which is arched; its two branches are often spirally contorted. In the internal angle of each cell is inserted a double salient placenta, the two faces of which are charged with a considerable number of small anatropous ovules.[1] The fruit, ordinarily capsular, triangular and furnished with three unequal wings, corresponding to the back of the cells, more rarely quadrangular, rounded, not winged, or more or less fleshy, encloses from two to five multiovulate cells. When dry, it opens either along its entire length, septicidally or loculicidally, or, more frequently, only at the upper part. More rarely the wall bursts irregularly to allow the seeds to escape; and when fleshy it may break or tear in a very variable manner. The seeds are small and numerous; theircoat is reticulated, often thickened externally, when fresh, in a loosely cellulose bed. The albumen is nil or thin. The embryo, fleshy, subcylindrical or ovoid, has a thick radicle and very short cotyledons the plane surfaces of which are contiguous.

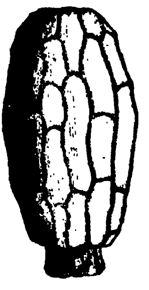

Fig. 352. Seed ($\frac{20}{1}$).

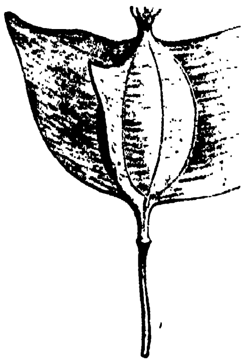

Fig. 351. Fruit.

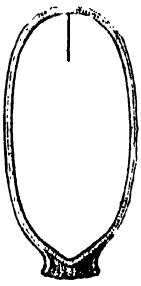

Fig. 353. Long. sect. of seed.

There are male flowers of *Begonia* in which the inner folioles of the perianth are more than two,[2] and others where they are entirely wanting. The stamens may occupy the whole circumference of the receptacle; but, in some species, they are collected in a fascicle on the side of the parent bract; so that one portion of the receptacle remains bare to a variable extent, and the position of the andrœcium is in reality excentric.[1] In the female flower the folioles of the perianth are not unfrequently six in number, three of which are exterior and three alternate interior, often of different colour and consistence.

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[1] A double coat.

[2] To say nothing of flowers doubled by cultivation, of which we have a very great variety. Those of which the duplication was first observed were chiefly males. (See *Bull. Soc. Linn. Par.* 236.)

More than 300 species of *Begonia*[2] are known; many more have been described, exclusive of varieties and hybrids. They are herbaceous or subshrubby plants, with an erect stem, simple or branched, oftener short, stubby, sometimes dilated in a rhizome gorged with juice and tuberous; they are sometimes even sarmentose, nearly climbing. The leaves are alternate, subverticillate, not unfrequently distichous, entire, dentate, lobed or digitipartite, very generally unsymmetrical, dilated on one side of the base. The petiole is accompanied by two lateral stipules, free, often caducous, often enlarged at the base like the leaf. The flowers[3] are in more or less compound or branched, often long pedunculate axillar cymes, with bracts and bracteoles often opposite. Some inflorescences and entire portions of inflorescence are unisexual, in others the flowers of both sexes are united, the males, in this case, often being central and the females circumferential. Begonias are found in all warm regions of the globe except Australia; they are rare in the isles of the Pacific Ocean. Many are cultivated as ornamental.[4]

Beside this genus have been placed *Hillebrandia* and *Begoniella*. The former, natives of the Sandwich Isles, represent perhaps the most perfect type of the family, inasmuch as the flowers of both sexes have a pentamerous calyx and corolla, and the females, with a rudimentary andrœcium, have an ovary with five alternipetalous carpels, united in an ovary wide open at summit with five parietal placentas. *Begonielle* is Columbian; it has a peculiar simple, gamophyllous perianth, and the male flower is tetrandrous.

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[1] See PAYER, *loc. cit.* 438. This andrœcium then resembles that of *Pleurandra* (i. 99).

[2] A. DC. *loc. cit.* 269, 278; 406 (*Mezierea*).

[3] White, pink, red or yellow.

[4] A fragment of leaf or even a single phytocyst suffices to reproduce them.

This small family was established by R. Brown in 1818. It contains about 350 species, of which 348 are *Begonia*. These have been compared with Polygonaceæ, which they resemble only in the form of the fruit and the acidity of the leaves.[2] They have also been considered analogous to the Saxifragaceæ (Hydrangeeæ, Datisceæ). Their closest affinity is with the Cucurbitaceæ, Loasaceæ and Passifloraceæ, particularly with Ceratosicyos. The Begoniaceæ differ from the Cucurbitaceæ in the andrœcium, and from the Passifloraceæ in their inferior ovary.

Few species are useful.[3] The stumps of *Begonia tomentosa* and *grandiflora* Domb., of Peru, bitter and astringent, are employed in this country for hemorrhage, flux and scorbutic affections. The same properties are accorded to *B. acetosa* Vill., *acida* Vill., *bidentata* Radd., *cucullata* W., *hirtella* Lk, *plantaginifolia* Schott, *sanguinea* Radd., *spathulata* W. In Mexico, *B. Balmisiana* is a diuretic, diaphoretic, antisyphilitic. In Java, *B. bombycina* Bl., and in India, *B. malabarica* Dryand. and *tuberosa* Lamk, the last tinctorial, are potherbs; the rhizomes are astringents and vulneraries. In Jamaica, *B. acutifolia* Jacq. is accounted antiscorbutic; poultices are prepared from it. *B. hirsuta* Aubl., *repens* Lamk and *ulmifolia* W. have the same reputation in S. America. The sap of *B. robusta* Bl., of Java, is refreshing. As well as so many astringents, this genus contains purgative plants. *B. anemonoides* Azar., drastic, is prescribed in scrofulous and syphilitic affections; *B. gracilis* H. B., employed as a vacuant in Mexico (*Yerba de la doncella*); and *B. obliqua* L., the wild Rhubarb of E. India. A great many species and varieties are ornamental.

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[1] *Tuck. Congo*, 464.—Endl. *Gen.* 941, Ord. 203.—Lindl. *Veg. Kingd.* 318, Ord. 107.—B. H. *Gen.* i. 841, Ord. 76.

[2] To establish affinities with the Polygonaceæ, much importance is attached to the bioxalate of potash contained in the juices extracted from *Begonia*; it is thought that the numerous parenchymous crystals of *Begonia* are the oxalate of lime.

[3] Endl. *Enchirid.* 494.—Mér. et Del. *Dict. Mat. méd.* i. 569.—Lindl. *Veg. Kingd.* 319.—Rosenth. *Syn. pl. diaphor.* i. 567.

GENERA.

1. **Begonia** PLUM.—Flowers monœcious or polygamous; male receptacle convex. Perianth coloured; exterior folioles oftener 2, or more rarely 3–∞; the interior oftener 2, alternate, more petaloid, or more rarely 3–∞, imbricate. Stamens ∞, inserted all round or on one side of the receptacle; filaments free or more or less 1-adelphous; anthers continuous with filament; cells adnate to connective sometimes produced at apex, laterally or introrsely or extrorsely rimose. Female receptacle concave, sometimes externally alate, enclosing ovary. Folioles of perianth 5, 6, or more rarely more, inserted in throat of receptacle; the outer oftener 2, more sepaloid; imbricate in prefloration. Cells of inferior ovary 2–5, complete or incomplete; style free or adnate at base, 2-fid above; lobes stigmatose entire or divided. Placentas simple or 2-lobed, multiovular. Fruit oftener triangular and unequally 3-alate, sometimes terete or 4–5-angled, either capsular and dehiscing above loculicidally or septicidally through its entire length, or baccate and breaking or dehiscing irregularly. Seeds ∞, very small, externally cellulose reticulate; albumen scanty or 0; cotyledons of fleshy embryo very short plano-convex; radicle thick terete or hemispherical.—Herbs or shrubs; stem short erect or raised subsarmentose, simple or branched, sometimes tuberous rhizomatic or tubercular; leaves alternate, rarely subverticillate, generally unequal at base, sometimes succulent; flowers in axillar cymes pedunculate more or less compound cymose, 1- or 2-sexual, bracteate and bracteolate. (*Nearly all trop. and subtrop. reg.*)—See p. 493.

2. **Hillebrandia** OLIV.[1] — Flowers nearly of *Begonia*; male sepals 5, more or less unequal, imbricate. Petals 5, alternate with

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[1] —B. H. *Gen.* i. 843, n. 2.

sepals and much smaller spathulate subcucullate. Stamens ∞, central free unequal; anthers oblong, 2-rimose. Female receptacle sac-like, enclosing adnate ovary. Perianth as male, inserted in throat of receptacle. Staminodes ∞, glandular, inserted with perianth. Ovary large partly inferior, opening at free apex; styles 5, alternipetalous, 2-furcate; stigmatiferous limbs spirally contorted. Placentas 5, parietal, prominent, alternate with styles, ∞-ovulate. Fruit capsular, widely dehiscing at apex between styles. Seeds ∞, areolate exalbuminous.—A succulent rather pilose herb; leaves alternate unequally cordate-rotundate lobed; lobes serrate; flowers in compound bracteate and bracteolate, 2-sexual cymes. (*Sandwich Is.*[1])

3. **Begoniella** Oliv.[2]—Flowers monœcious; male perianth simple gamophyllous campanulate erect, shortly 4-lobed. Stamens 4, 1-adelphous; anthers obovate cuneate, 2-fid or obcordate; cells 2, laterally divided; connective membranous, traversed by a central nerve 2-fid at apex. Female perianth as male. Ovary inferior, 3-alate, 3-celled; style taperingly much divided nearly from base; branches furcellate or variously divided. Placentas from inner angles of cells lanceolate, ∞-ovulate. Capsule septicidal, 3-alate; seeds ∞. —A papillose setiferous herb[2]; leaves alternate membranous oblong elliptical, oblique at base, stipulate; flowers[3] in erect axillar cymes, bracteate. (*N.-Granada.*[4])

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[1] Spec. 1. *H. sandwicensis* Oliv.

[2] *Trans. Linn. Soc.* xxviii. 513, t. 41.

[3] Habit of *Begonia* or the *Gesneraceæ*.

[4] Spec. 1. *B. Whitei* Oliv.

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PRINTED BY GILBERT AND RIVINGTON, LIMITED, ST. JOHN'S HOUSE, CLERKENWELL ROAD, LONDON.